



Abertay University

Digital Forensics Report

Isabella , Tia and Aidan

CMP209 Digital Forensics 1
BSc Ethical Hacking
Abertay University
Dundee, United Kingdom

2019/20

Contents

1 Job Description and Instructions	1
2 Description of Recovered / Examined Items	2
3 Analysis Methodology	3
3.1 Disk Imaging	3
3.2 Physical Searching	4
3.2.1 Disk Analysis	4
3.2.2 Autopsy	4
3.2.3 File Carving	6
3.2.4 Images	6
3.3 Prefetch Analysis	7
3.4 Registry Examination	7
3.5 Browser Analysis	7
3.6 E-mail Analysis	8
3.7 Encrypted Archive	8
4 Analysis	10
4.1 Physical Searching	10
4.1.1 Disk Analysis	10
4.1.2 Summary of the Partition Table	10
4.1.3 Images	12
4.1.4 Audio Files	13
4.2 Logical Searching	13
4.2.1 Hidden Partition	13
4.2.2 PDF's	14
4.2.3 E-mails	14
4.2.4 Bookmarked Pages	15
4.2.5 Browsing History	16
4.2.6 Downloaded Files	17
4.2.7 Miscellaneous Documents	20
4.2.8 Encrypted Archive	21

4.2.9 Registry Analysis	21
4.2.10 Prefetch Analysis	22
5 Timeline Reconstruction	23
6 Conclusions	25
7 Contributions	26
8 Equipment Required for Court Proceedings	27
Appendices	29
A Chain of Custody Documentation	29
B Bird Images	32
C Canon Photos	50
D Documents	57
E PDF's	68
F Websites	71
G Emails	76
H Recycling Bin	79
I Registry Analysis	80
J Autopsy	83
K Downloaded Files	84
L Bookmarks	87
M Browsing History	88

1 Job Description and Instructions

The team have been asked by Abertay University and Police Scotland to aid an investigation into an allegation that Mr John Doe has been possessing material of an ornithological nature. In this situation the team will be looking for mainly images and videos of birds, but may also record any other bird related material such as documents, websites and conversations as evidence to support this accusation.

The pieces of evidence provided were recovered from John Doe's home then passed on to the team to be forensically investigated for any incriminating pieces of evidence.

The team have passed any relevant information about those involved, either as victims to ensure that they get the necessary help and support that they may require and information that could aid the investigation, as well as any suspects that have been identified during the investigation to the relevant team members.

The team that has been assigned the task of carrying out the forensic investigation of the Hard Drive recovered from John Doe's home, are Isabella [REDACTED], Aidan and Tia

2 Description of Recovered / Examined Items

A recovered physical item that was passed on to our team that was retrieved from the crime scene was a physically intact Hard Disk Drive - a Seagate 180GB Hard Drive with the serial number '6VY0K163'. There was suitable cause to believe that there is evidence pertaining to the court case within this drive. The drive itself had no apparent damage to it.

The machine it was attached to was in a powered off state, which means there was no volatile data that was going to be lost. To ensure sound transportation from the crime scene to the testing lab, the digital evidence was collected in an anti-static evidence bag, which was then placed into a Faraday cage to make sure that there was no damage to the device that would harm the evidence.

A Canon Powershot SD100 Camera has also been recovered from the crime scene, there is a strong indication that it has been used as an accessory of the crime as some of the images that were recovered from the hard drive were taken with the camera that was taken as evidence from the scene.

Within the Hard Disk Drive itself, the analysts recovered evidence such as Mr. John Doe's internet history logs, images, PDF's, documents, registry information. These will be included in the appendix and will be referenced throughout the report.

The rest of the machine and its associated accessories are being held in custody and will be brought to the court as physical evidence. There was nothing of significance to report about the machine and accessories.

Name	Description	Serial Number	Recovered/Examined?
Hard Disk Drive (HDD)	Seagate 180GB Hard Drive	6VY0K163	Examined
Camera	Canon Powershot SD100	NULL	Recovered

Table 1: Evidence brought in for investigation

3 Analysis Methodology

Before any of the analysts accessed any of the evidence or the copy of best evidence, the lab machines being used as part of the investigation were tested for malware and viruses to ensure that any evidence or copies of evidence were not tampered with or damaged by outside sources. The machines are also connected to a private network which means malicious outsiders were not able to ‘hack’ into the lab machines to delete or tamper the evidence or the best copy.

3.1 Disk Imaging

As the team only received the accused’s Hard Drive, they did not have to carry out any other actions in regard to the machine or accessories that would have been attached to it in the crime scene. To get a copy of the best evidence which will allow the analysts to access the digital evidence, a copy of the hard drive was created using a write blocker to ensure that the copy of best evidence was the exact same and has not been changed at all.

The copy of best evidence has been stored on a San Disk 32GB USB Drive, an image of the hard drive was saved as a .dd file called johnDoe.dd, it is important to note that the USB was kept within a secure environment to ensure it was not tampered with.

Once the analysts have created an image of the hard drive, they checked that the copy of the Hard Drive was an exact copy and that there was no loss or corruption during the mirroring process. To do this, the analysts checked the MD5 hash of the hard drive and the image to ensure that they are the exact same. The permissions on the image itself had also been set to read only which meant that the team would not accidentally overwrite the evidence or tamper with it.

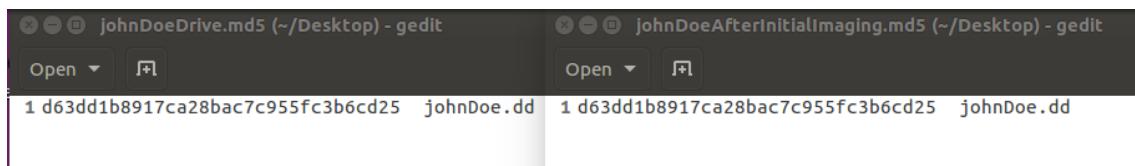


Figure 1: Hashes from the original Hard Drive and the Hard Drive image

The analysts also checked the hard-drive’s image for any potential malware. There was found to be no malware on the hard-drive, so the analysts proceeded with the investigation.

3.2 Physical Searching

3.2.1 Disk Analysis

For the disk analysis stage, the analysts utilised a multitude of tools which were used to gather information that was on the hard drive and information about the capacity and specifications of the hard drive itself. Some of the tools were also used in order to recover any significant data that was found, to ensure that any evidence that was contained on the hard drive was being obtained and recorded properly.

3.2.2 Autopsy

Autopsy is a digital forensics tool that summarises all the data found on forensic images, such as the image of the hard drive that was taken as a copy of best evidence, and allows to analysts to view an emulated file system. Autopsy does this by hashing all files, unpacking compressed files and archives, extracting EXIF values and adding any keywords to an index.

From the autopsy results, the analysts were able to identify emails sent to and from the accused individual to a Mr. Ben Forbes with each of the topics of the emails being about birds. Also found was an email from a bird mailing list detailing how to identify birds. This tool assisted the analysts in finding information that may have been difficult to find in normal circumstances and helped to identify areas of the system memory that may be of interest.

From the use of autopsy, the team were also able to identify at least forty-five photos of an ornithological nature from the hard drive image, sixteen of which that had been taken with a Canon Powershot SD100, that matches the same camera that was recovered from the crime scene. The tool also identified two photos of birds in a natural setting, that were sent on an email, one taken with a Canon EOS-1DS and one with a Sony Cybershot - both of which were sent from Ben Forbes in an email to John Doe. An example of the software being used to retrieve the photos sent in emails can be seen in figures 2, 3 and 4.

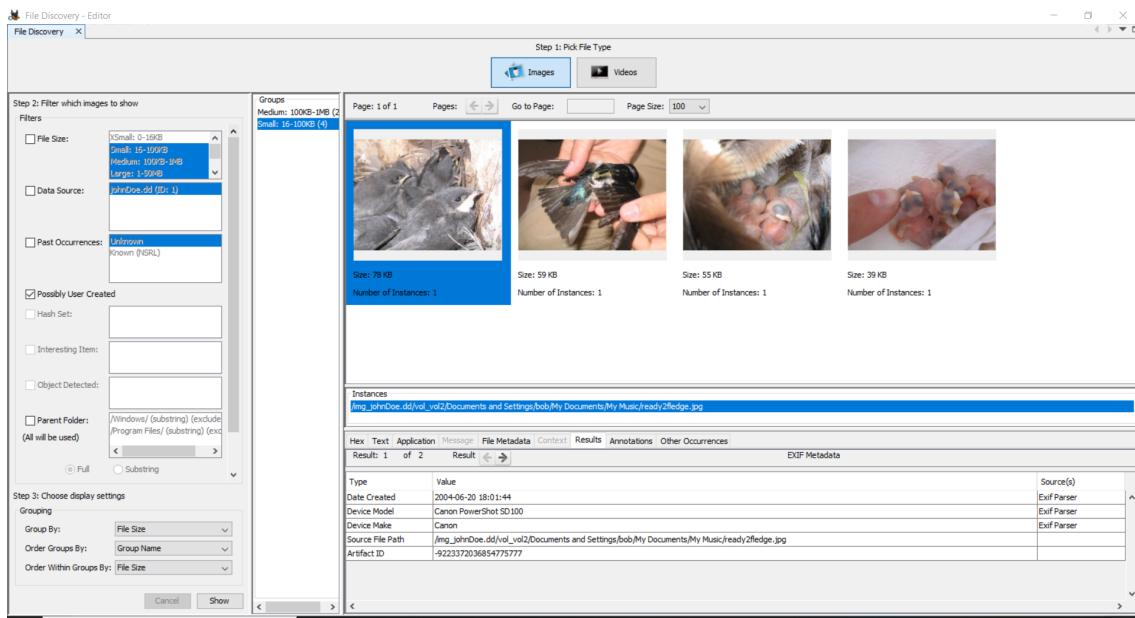


Figure 2: Images taken with a Canon Powershot SD100

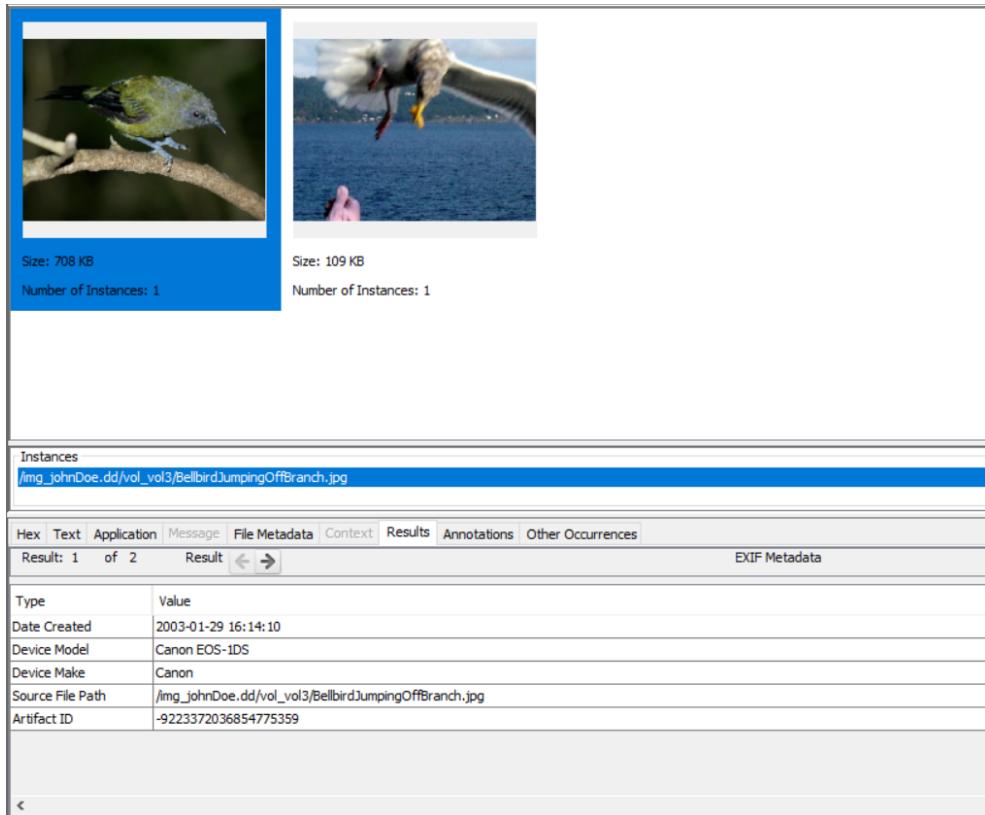


Figure 3: Image taken with a Canon EOS-1DS

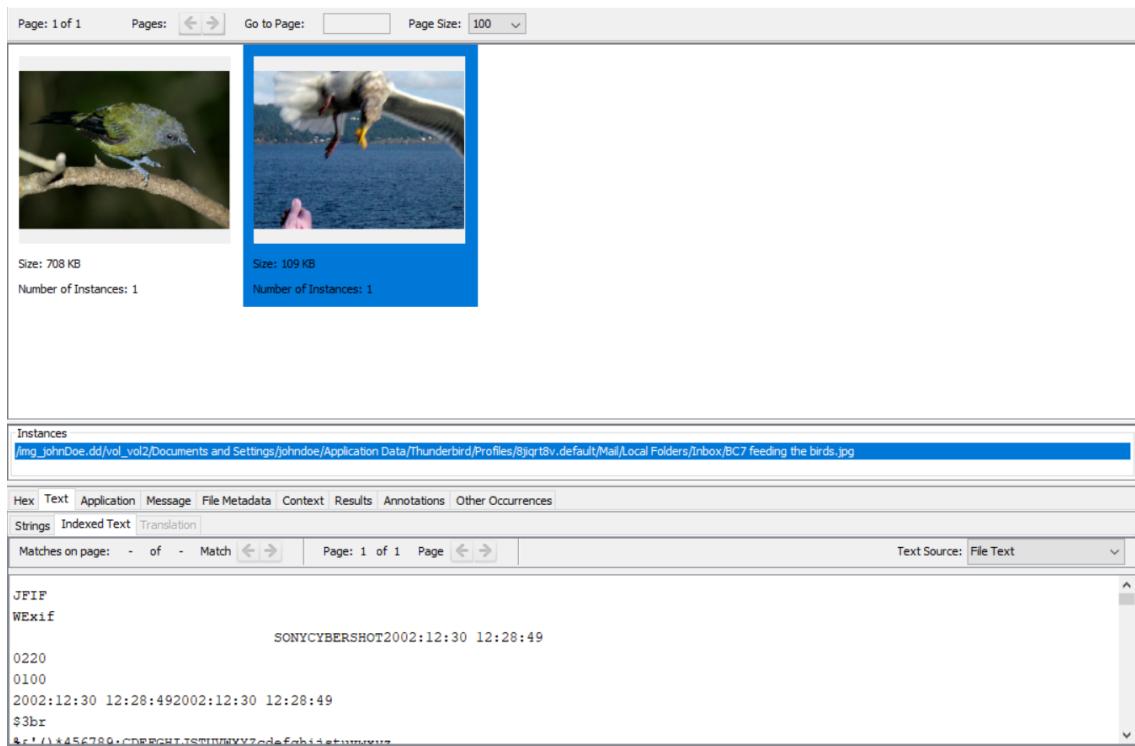


Figure 4: Image taken with a Sony Cybershot

3.2.3 File Carving

The initial file carving tool used was foremost, which is used by digital forensic analysts to recover files from hard drives. The tool will recover any and all files that are on the selected image which allowed the team to discover the images on the disk, as well as documents, programs and user information.

From the file carving, the team were able to identify a range of images that were of ornithological nature, as well as some of people of interest which have been passed to the relevant authorities, the team were also able to identify and retrieve the contents of a hidden partition within the hard drive.

3.2.4 Images

As the suspect had been accused of possessing ornithological material, the analysts were looking for images that matched this description. These images could be of birds themselves, bird related images such as bird houses, bird seed and anything that resembles or mimics a bird.

The team had to use a range of tools to find and obtain these images to record them as evidence, such as file carving, browser analysis, email forensics, cracking

passwords to access encrypted files and more that this report will discuss in detail and will demonstrate how these images were found.

There was an attempt to hide some of these images both through encrypted folders which required a password to access them and some of the images were hidden within the memory and made inaccessible through normal use of the computer and required the analysts to use tools to access this part of the memory to retrieve the images.

3.3 Prefetch Analysis

In order to load commonly used programs faster, Windows keeps a record of all recently run programs. There may also be multiple prefetch files for the same program if the executable was moved or run from a different location. This can be useful for investigators as each file shows a program that has been run, and the times these files were created can give information for piecing together a timeline of events.

3.4 Registry Examination

Each machine will have a registry, it is a database of everything that is within the machine for example, what is installed on the computer, what hardware the machine is built with, what programs are installed, any devices that have been attached and what users are on the machine as well as the activity on the machine from users, software and hardware.

This information is particularly important to the analysts, especially if there have been USB's and other removable media devices attached to the machine. If there has been any programs that have been removed before the hard drive was seized and had been used as part of the crime - as well as the last time the machine was switched on and off - it will tell the analysts when the timeline of the incident finished.

3.5 Browser Analysis

There were two browsers on John Doe's account, Google Chrome and Mozilla Firefox, Google Chrome had no information and had not been used, however Mozilla Firefox had been used by the suspect.

In order to aide user navigation and accessibility, Mozilla Firefox stores information such as browsing history, file downloads and bookmarked pages in a local cache on the users device.

This cache proved to be very useful to the analysts as it provided much information on the activities and interests of the accused. It also assists the analysts in creating an accurate timeline of events. The information allowed the analysts to build a

profile around the suspect, which gave the analysts an insight into the suspect's activities for any ornithological related material that may not have been found on the hard drive yet.

3.6 E-mail Analysis

A personal email client, namely Mozilla Thunderbird, was found installed on the suspect's PC. This mail client is a cross-platform client. It also allows users to link multiple email accounts to one single mailbox. These local mail clients save all the account's information in the user's local storage allowing analysts to look for relevant files, emails and other information.

This is useful to the analysts as it allows them to view the suspect's personal correspondence and in cases like these, allows for a network of potential suspects and persons of interest to be drawn up. It also lets the team check if the suspect was involved in the distribution of ornithological materials in this way.

3.7 Encrypted Archive

A gpg encrypted file, `birdpics.gpg`, was found in the main partition. The cryptographic key needed for this, `secring.gpg`, was found in John Doe's "Application Data/GnuPG" directory. The key was imported to the GPG keyring so that it can be used to decrypt files, which can be seen in figure 5.

```
izzy@debra:/mnt/john1/Documents and Settings/johndoe/Application Data/GnuPG$ ls
gpg.conf  gpg.conf.0  gpg.conf.old  pubring.bak  pubring.gpg  random_seed  secring.gpg  trustdb.gpg
izzy@debra:/mnt/john1/Documents and Settings/johndoe/Application Data/GnuPG$ gpg --import secring.gpg
gpg: /home/izzy/.gnupg/trustdb.gpg: trustdb created
gpg: key 595A1BDBB1D70130: public key "johndoe <johndoe@example.com>" imported
gpg: key 595A1BDBB1D70130: secret key imported
gpg: Total number processed: 1
gpg:           imported: 1
gpg:           secret keys read: 1
gpg:           secret keys imported: 1
```

Figure 5: Importing the GPG key

Once John Doe's key was added to the investigator's keyring, the file in question was decrypted, as seen in figure 6.

```
izzy@debra:~/Documents/df$ gpg -o output birdpics.gpg
gpg: WARNING: no command supplied. Trying to guess what you mean ...
gpg: encrypted with 1792-bit ELG key, ID 00061728D3A19CCC, created 2005-02-02
      "johndoe <johndoe@example.com>"
```

Figure 6: Decrypting `birdpics.gpg`

The password of the key used to decrypt the file is the same as found earlier in the Thunderbird email files, seen in section 4.1.6. Foremost was then used to recover the files, which can be seen in figure 7.

```
izzy@debra:~/Documents/df$ foremost output.zip
Processing: output.zip
| foundat=E:\birds\birdpics\WhiteThroatedSparrowInTree.jpg?????
foundat=E:\birds\birdpics\WhoopingCranes.jpg?????
foundat=E:\birds\birdpics\yellow-wag-cover-nb.jpg?????
foundat=E:\birds\birdpics\WhiteFrontedParrot.jpg?????
foundat=E:\birds\birdpics\WhiteFacedHeronFlying.jpg?????
*|
```

Figure 7: Recovering the files

4 Analysis

4.1 Physical Searching

4.1.1 Disk Analysis

From an initial analysis of the disk image by using testDisk, the team were able to identify that the hard drive's used memory was taking up 2.926GB which indicates to the team that there is a large amount of data stored on the hard drive. It was assumed that this memory was the bootable partition that holds the system information, user information, documents, images, programs and any other data that is stored on to the machine.

The total space of the hard disk was assumed to be 2.9GB, however the tool used to mount the image to the windows machine in the lab identified that the total capacity of the hard disk was 5.367GB. The analysts decided to have a look at the partition table and see if there was a logical reason for the discrepancy in the size difference.

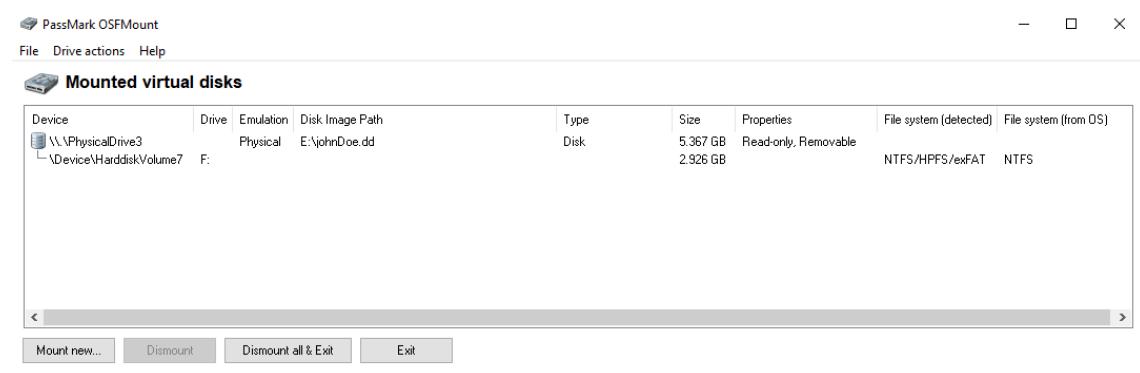


Figure 8: Summary of disk space on the hard drive

4.1.2 Summary of the Partition Table

In order to have a closer look at the partitions within the file, the team used a command line feature to get a summary of the partitions, the team simply used this command to grab a much more detailed summary of exactly what the partitions the hard drive contained.

```
admin@H83:~$ mmfs -i raw ~/Desktop/johnDoe.dd
DOS Partition Table
Offset Sector: 0
Units are in 512-byte sectors

      Slot      Start      End      Length      Description
000: Meta    0000000000  0000000000  0000000001  Primary Table (#0)
001: -----  0000000000  0000000062  0000000063  Unallocated
002: 000:000  0000000063  0006136829  0006136767  NTFS / exFAT (0x07)
003: -----  0006136830  0011255327  0005118498  Unallocated
```

Figure 9: Summary of the Partition Table

From figure 9 and from the original disk analysis, the team used the tool testDisk to identify that there was a hidden partition within the memory, this is shown as 'unallocated' on the summary where the block length is equal to '0005118498', because the block length is such a large number, the team identified that there is likely to be something of interest within the hidden partition.

To ensure that the hidden partition makes up for the discrepancy in the hard drive space, the team divided the block length, 0005118498 by 1024, three times to get the size in GB's. The result of the calculation was, 2.440690041GB's, which makes up for the missing 2.4GB in the total disk space used within the hard drive.

The images and document discovered within the hidden partition were recovered and have been added to the appendix. Something that was also recovered from the hidden partition was two images within the recycling bin titled "Df1.jpg" and an image that had been deleted from the recycling bin , "bluebird2.jpg", these images have been recovered and recorded as evidence. A list of contents found in the recycling bin within the hidden partition and the partition itself, can be found at figures 10 and 11.

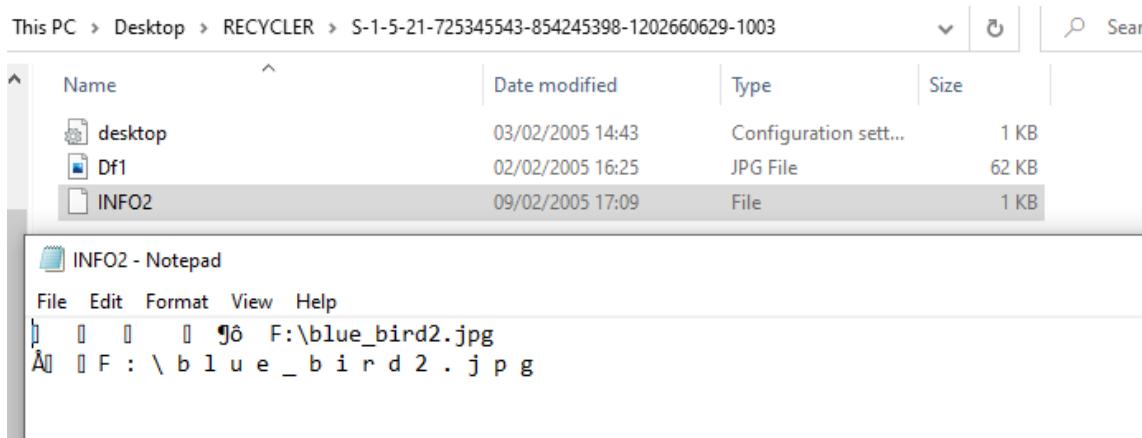


Figure 10: Contents of the recycling bin in the hidden partition.

```

C:\Users\Tia\Documents\testdisk-7.2-WIP.win64\testdisk-7.2-WIP\testdisk_win.exe
TestDisk 7.2-WIP, Data Recovery Utility, January 2020
Christophe GRENIER <grenier@cgsecurity.org>
https://www.cgsecurity.org
 2 P HPFS - NTFS      382    0  1    699 254 63      5108670 [New Volume]
Directory /

>dr-xr-xr-x  0    0    0  9-Feb-2005 17:05 .
dr-xr-xr-x  0    0    0  9-Feb-2005 17:05 ..
dr-xr-xr-x  0    0    0  3-Feb-2005 11:50 RECYCLER
dr-xr-xr-x  0    0    0  9-Feb-2005 03:10 System Volume Information
-r--r--r--  0    0  177015 2-Feb-2005 16:25 AlmondMarshGreatBlueHeronStalling.jpg
-r--r--r--  0    0  169113 2-Feb-2005 16:25 AmericanAvocetWinterPlumage.jpg
-r--r--r--  0    0  201333 2-Feb-2005 16:25 AmericanWhitePelicansCircling.jpg
-r--r--r--  0    0  236167 2-Feb-2005 16:25 BaldEagle7oClock.jpg
-r--r--r--  0    0  141219 2-Feb-2005 16:25 BarnOwl.jpg
-r--r--r--  0    0  708321 2-Feb-2005 16:25 BellbirdJumpingOffBranch.jpg
-r--r--r--  0    0  250681 2-Feb-2005 16:25 BlackNeckedStiltsFromBehind.jpg
-r--r--r--  0    0  307904 2-Feb-2005 16:25 BlackSwan.jpg
-r--r--r--  0    0  225055 2-Feb-2005 16:25 BlackVultureSunningOnPost.jpg
-r--r--r--  0    0  316153 2-Feb-2005 16:25 GreatBlueHeronWithFish.jpg
-r--r--r--  0    0  222087 2-Feb-2005 16:25 GreatEgretInVoloBog.jpg
-r--r--r--  0    0  370427 2-Feb-2005 16:25 GreatEgretOverflyingRoseateSpoonbills.jpg
-r--r--r--  0    0  237211 2-Feb-2005 16:25 GreenHeronCloseup.jpg
-r--r--r--  0    0  268603 2-Feb-2005 16:25 GreenHeronOnChicagoLakeshore.jpg
-r--r--r--  0    0  319226 2-Feb-2005 16:25 ImmatureSnowyEgretTakingOff.jpg
-r--r--r--  0    0  215577 2-Feb-2005 16:25 KeaAndMountain.jpg
-r--r--r--  0    0  302422 2-Feb-2005 16:25 KeaAtTopOfMacKinnonPass0930.jpg
-r--r--r--  0    0  318806 2-Feb-2005 16:25 KeaEatingRentalCar.jpg
-r--r--r--  0    0  301837 2-Feb-2005 16:25 KeaRetrievingBakedBeanCanFromTarn.jpg
-r--r--r--  0    0  20618  2-Feb-2005 16:25 brd_Ornithologist_TWG.jpg
-r--r--r--  0    0  25088  2-Feb-2005 16:25 guide.doc
-r--r--r--  0    0  61326  2-Feb-2005 16:25 june03screen.jpg
-r--r--r--  0    0  194014 2-Feb-2005 16:25 junescreen01.jpg

```

Figure 11: Hidden partition contents displayed using testDisk

4.1.3 Images

The team were able to identify that there were at least sixty images of an ornithological nature, many of birds in their natural habitat, some that have been captured - with some having transmitters attached to them and some of these images are comics, bird costumes and bird related images such as bird huts and seed.

Some of these images were downloaded from the internet and some have been sent from Mr. Ben Forbes within emails in response to Mr. John Doe sending material to him. From using autopsy, the analysts were able to determine that two of the images sent to the suspect were taken with a Canon EOS-1DS and a Sony Cybershot. These can be seen respectively at figures 3 and 4.

There were some ornithological images that the analysts were able to identify that had been taken with a '*Canon Powershot SD100*' which is the same camera device that was obtained as evidence from the accused's home. The photos taken were of baby birds and one of a bird with a transmitter attached to its back. These have been passed on to the relevant welfare teams to see if they are able to identify the birds in the photos and ensure their safety and well being. These images can be found in appendix B at figures 3, 4, 10, 16, 20, 25, 28, 29, 41, 45, 49, 50, 52, 54,

56 and 59.

There were also photos taken with the Canon Powershot SD100 - at the same time as the bird photos - of people as a group that seem to be looking for birds, as there are two pictures in particular of these individuals interfering with bird nests as well as multiple pictures of them handling birds and other creatures. These photos have been passed on to the relevant authorities to help in identifying any potential people of interest. These images can be seen in appendix D as well as the bird box photos in appendix B at figures 18 and 55.

4.1.4 Audio Files

The analysts were able to locate two relevant audio files on the suspect's device that contained ornithological materials. These files were uncovered during the analysis of the Mozilla Firefox download cache.

The first file was a RealPlayer Media link saved as "dawn.ram". This linked to a .rmd file hosted at "<http://www.pbs.org/lifeofbirds/songs/dawn.rmd>" which contained audio of what is referred to as the "song of the dawn bird" on the website it hosted on.

The second file was a Waveform audio file saved as aggressive_song.wav which was saved to a removable device and is no longer accessible. However accessing the file on the URL from which it was retrieved (http://whyfiles.org/shorties/104chick_sex/images/aggressive_song.wav), it is found to be an eight second audio clip of two or more birds calling and chirping.

The download data containing the relevant information for these files can be found at figures 46 and 48 respectively.

4.2 Logical Searching

4.2.1 Hidden Partition

Through accessing the partition the analysts were able to find that there were twenty-two images and a document titled guide.doc within the hidden partition which contained information on bird field trips, as well as recycle bin contents (figure 34) containing a deleted bird picture. It is obvious that the accused has attempted to hide these images and the document which are all of ornithological nature, as the partition was deliberately created to be hidden from the system's memory.

```
izzy@debra:/mnt/john2$ ls
AlmondMarshGreatBlueHeronStalling.jpg  brd_Ornithologist_TWG.jpg  junescreen01.jpg
AmericanAvocetWinterPlumage.jpg  GreatBlueHeronWithFish.jpg  KeaAndMountain.jpg
AmericanWhitePelicansCircling.jpg  GreatEgretInVoloBog.jpg  KeaAtTopOfMacKinnonPass0930.jpg
BaldEagle7oClock.jpg  GreatEgretOverflyingRoseateSpoonbills.jpg  KeaEatingRentalCar.jpg
BarnOwl.jpg  GreenHeronCloseup.jpg  KeaRetrievingBakedBeanCanFromTarn.jpg
BellbirdJumpingOffBranch.jpg  GreenHeronOnChicagoLakeshore.jpg  RECYCLER
BlackNeckedStiltsFromBehind.jpg  guide.doc
BlackSwan.jpg  ImmatureSnowyEgretTakingOff.jpg
BlackVultureSunningOnPost.jpg  june03screen.jpg

```

Figure 12: Hidden partition contents

4.2.2 PDF's

During the physical search, the analysts were able to identify the contents of John Doe's recycling bin on his account. Within the recycling bin, there were three PDF's which all had content of an ornithological nature. Using file carving, the team were able to recover the PDF's from the recycling bin and examine the PDF's for any evidence.

```
.\Documents and Settings\john doe\My Documents\BirdingGuide.pdf
$XÉA € C : \Documents and Settings\john doe\My Documents\BirdingGuide.pdf
.\Documents and Settings\john doe\My Documents\news_sprg2001.pdf
$YÉA € C : \Documents and Settings\john doe\My Documents\news_sprg2001.pdf
.\Documents and Settings\john doe\My Documents\57ab_perth.pdf
$YÉA € C : \Documents and Settings\john doe\My Documents\57ab_perth.pdf

```

Figure 13: PDF's found in the recycling bin

The first PDF was a single page file that detailed birding sites around Perth, Australia, the second PDF was a 12 page newsletter from the University of California's botanical garden which contains information and images of birds on the front cover and within the PDF itself. The third PDF was a birding guide that contains 23 pages of detailed information on birding in Lake Michigan. The front covers of these PDF's can be found at appendix E.

4.2.3 E-mails

The analysts were able to recover several emails received by John Doe, many of which contain ornithological material. These emails were retrieved from the local cache of the mail client that Doe used, Mozilla Thunderbird at 'C:/Documents and Settings/john doe/Application Data/Thunderbird/Profiles/9jijqrt8v.default'. The account linked to this mail client was "jdoe@example.com" and the password was found stored locally, base64 encoded as " YXJyYW4=". This decodes to 'arran'.

On Saturday 16/10/2004 at 18:51:39, Doe received an email from the “Bird Fanciers” mailing list (email: mailinglist@birds.example.com) with the subject line “How to Identify Birds”. The email detailed how to identify different bird species and where an individual should start to be able to successfully identify more birds. See figure 33 for transcript.

On Wednesday 17/11/2004 at 19:51:39, Doe received an email from Ben Forbes (email: ben@example.com) with the subject line “good pics”. This email contained a short comment from Forbes, saying he believed Doe would like the attached images, followed by 3 attachments. The first attachment was “7EYBTELF1KAN.jpg” and appears to be an image of two parrots in a cage. The second attachment was “IMG_3937_filtered.jpg” and appears to be an image of a blue bird sitting on a tree branch. The third attachment was “cute_penguin.jpg” and appears to be an image of a balloon animal shaped like a penguin. This confirms the suspicious that Ben Forbes is another individual with explicit ornithological interests. See figure 30 for transcript.

On Tuesday 08/02/2005 at 14:35:29, Doe received another email from Ben Forbes (email: ben@example.com) with the subject line “some more good ones”. Forbes thanks Doe for sending him images and offers the four attachments found on the email in return. This suggests that Doe is involved in the distribution of ornithological materials. The first attachment was “BC7 feeding the birds.jpg” and appears to be an image of a mans hand having just fed a chip to a seagull of some sort while it is still in flight. The second attachment was “glfs-storm-birds.jpg” and appears to be an image of a red-winged blackbird feeding its chicks in a nest with a caption at the bottom that reads “Nesting red-winged blackbird/ carouge à épaulettes en cours de nidification Mike Hopiak/ Cornell Lab of Ornithology”. The third attachment was “colorful-birds.jpg” and appears to be an image of three green birds with blue heads standing on grass. The fourth attachment was another copy of “IMG_3937_filtered.jpg” and appears to be the same image sent in the previous email correspondence. The fifth attachment was “gawall8.jpg” and appears to be an image of a Gadwall Duck in a pond. See figure 31.

On Wednesday 09/02/2005 at 11:08:07, Doe received an email from Ben Forbes (email: ben@example.com) with the subject line “expensive birds”. The email went on to tell a comical story about a bird being eaten. see figure 32 for transcript.

4.2.4 Bookmarked Pages

During investigation of Mozilla Firefox’s local browser cache, a file at ‘C:/ Documents and settings/johndoe/Application Data/Mozilla/Firefox/Profiles/ w4nf3obl.default/bookmarks.html’ containing a list of Doe’s saved pages on his Firefox profile. These were titled ‘Free Bird Wallpaper - Bald Eagle Albatross Owl Falcon 1023 x 768’, ‘Alphabetical Index of Birds’ and ‘Chickadee Karaoke’. See figure 58 for copy of the HTML file.

4.2.5 Browsing History

The analysts made use of Mozilla Firefox's local browser cache to uncover Doe's relevant browsing history. This allowed a more concise profile of the suspects activities on the device to be made. Much of the content found was explicitly Ornithological in nature. The file that was used to retrieve this information was located at 'C:/Documents and Settings/johndoe/Application Data/Mozilla/Firefox/Profiles/w4nf3obl.default/history.dat'

It was found in the aforementioned file that Mozilla's mail client 'Thunderbird' was downloaded from 'www.mozilla.org/products/thunderbird', as can be seen in figure 59. It has been found that Doe used this mail client to access the email 'jdoe@example.com' and held correspondence with Ben Forbes and accessed bird-based mailing lists.

The file also shows a google search for the key phrase 'birds' which led Doe to 'http://www.pbs.org/lifeofbirds/songs/index.htm', a site from which download logs found audio files of bird song to be taken from (See figure 60).

The history log shows the user then returning to the search for 'birds' and using it to navigate to an Amazon (www.amazon.co.uk) search for 'birds' under the book category (See figure 61). Following this the Amazon pages for two books are accessed, first 'Garden Birds (Collins Gem) Paperback – 12 April 2012 by Stephen Moss', followed by 'The Secret Lives of Garden Birds Paperback – Illustrated, 30 April 2004 by Dominic Couzens' as can be seen in figure 62.

Another google search is identified in the log for the key phrase 'Bird wallpaper' (See figure 63), from which the user navigated to 'http://www.naturewallpaper.net/birdsLpages/image21.html' and saves the page locally, as can be seen in figure 64.

The History logs show the user accessing an advertisement link for a 'Bald Eagle' based-product, however the link no longer functions and the product cannot be identified any further from the URL accessed. Staying on this site the user then navigated to a page for purchasing a product titled 'Bird Watcher's Paradise (VIDEO)'. This can be seen in figure 65.

Another google search is made for the key phrase 'bird stories' (See figure 66, from which the user navigated to 'birding.about.com' and accessed five pages containing stories on how to care for birds and build enclosures for birds (See figure 67).

It was also found that the user accessed the Internet Movie Database's (www.IMDB.com) page for Alfred Hitchcock's 1963 movie "The Birds" as can be seen in figure 68.

The user later returned to the aforementioned 'www.pbs.org', to access two pages containing audio files for different bird songs (See figure 69).

The URL 'http://www.gnupg.org/download.html' was also found to have been accessed (see figure 70, which is the download page for a piece of privacy/encryption software known as GNU Privacy Guard. This is relevant as there were multiple

files found on the suspect's device that had been encrypted with this software. The user thereafter accessed a website with the url 'http://www.wnpt.org' which is now no longer hosted, however using the Internet Archive's 'Wayback Machine' (www.archive.org/net) it was found to be a download page for Windows privacy Tray which was the front-end software for GNU privacy guard. The user also accessed a guide on how to operate Windows Privacy Tray from the University of Hannover, which is also no longer available (See figure 71).

A google search for the phrase 'bird mating calls' was also made, leading the user to download 'aggressive_song.wav' from 'http://whyfiles.org/shorties/104chick_sex/' as can be seen in figure 72.

The history log also shows access to the URL 'http://insaneanimals.com/items/177.jpg' which was also found downloaded and stored locally on the suspect's device and found to be explicitly ornithological in content (See figure 73.)

Access to the 'ostbk2b2.htm' file that was also found on the suspect's device (for file contents, see Appendix D: ostbk2b2.htm) from 'www.cvm.okstate.edu', as can be seen in figure 74.

Access to the file 'chicks2.jpg' at 'people.cornell.edu/pages/sah67' was also found within the browser history, another file which was found saved locally and to be explicitly ornithological in content, as seen in figure 75.

A zipped folder was found to be downloaded in the browser history. Titled 'birds.zip', it was obtained from 'www.traveltex.com/downloads/screensavers' as can be seen in figure 76.

4.2.6 Downloaded Files

The analysts investigated the Mozilla Firefox browser's local cache on the suspect's device and were able to recover a log of downloaded files on the suspect's personal Firefox profile. This uncovered an array of ornithological materials.

On Wednesday 02/02/2005 at 15:12:09 GMT, Doe Downloaded a 1kB .ram file hosted at 'http://www.pbs.org/lifeofbirds/songs/dawn.ram' and saved it to local directory location 'C:\Documents and Settings\johndoe\Local Settings\Temp' as 'dawn.ram'. The file still exists in this location, with an actual file size of 35B. The .ram file contains a link to a .rmd file hosted publicly online at 'http://www.pbs.org/lifeofbirds/songs/dawn.rmd' containing audio of 'the dawn bird song' according to the website it is hosted on. See figure 46.

On Wednesday 02/02/2005 at 16:53:20, Doe downloaded a 20311kB .exe file hosted at 'http://ardownload.adobe.com/pub/adobe/reader/win/7x/7.0/enu/AdbeRdr70_enu_full.exe' and saved it to local directory location 'C:\Documents and Settings\johndoe\Desktop' as 'AdbeRdr_enu_full.exe'. The file still exists in this location, with the same file size and is an executable installer for adobe reader for Windows 7.0. See figure 47.

On Thursday 03/02/2005 at 12:22:52 GMT, Doe Downloaded a 716kB .wav file

hosted at ‘http://whyfiles.org/shorties/104chick_sex/images/aggressive_song.wav’ and saved it to local directory location ‘E:\birds\audio’ as ‘aggressive_song.wav’. The file cannot be accessed on the disk image as it was saved to a removable storage device however when the file was retrieved from the same link it was the same reported size. The file appeared to be an 8 second audio recording of 2 or more birds calling. See figure 48.

On Thursday 03/02/2005 at 15:00:19 GMT, Doe Downloaded a 38kB .jpg file hosted at ‘http://freespace.virgin.net/cobbler.budgies/images/babyscot_vyoung.jpg’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents\My Pictures’ as ‘babyscot_vyoung.jpg’. The file still exists in this location, with the same file size and appears to be an image of 3 newly hatched, featherless chicks huddling together near 3 unhatched eggs. They appear to be in a form of hatchery/nursery with sawdust coating the flooring and two yellow arrows edited onto the image pointing towards the huddle in the centre of the image coming from 3 o’clock and 7/8 o’clock. See figure 49 for download data and appendix B: Image 44 for the image.

On Thursday 03/02/2005 at 15:00:27 GMT, Doe Downloaded a 33kB .jpg file hosted at ‘http://freespace.virgin.net/cobber.budgies/images/babyscot_2weeks1.jpg’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents\My Pictures’ as ‘babyscot_2weeks1.jpg’. The file still exists in this location, with the same file size and appears to be an image of 3 young chicks in a box, presumably the same 3 chicks from ‘babyscot_vyoung.jpg’, in a box together with a yellow arrow edited onto the image pointing towards the chicks on the left-centre of the image coming from 3 o’clock. See figure 50 for download data and appendix B: Image 34 for the image.

On Thursday 03/02/2005 at 15:01:38 GMT, Doe Downloaded a 9kB .jpg file hosted at ‘<http://www.insaneanimals.com/items/177.jpg>’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents\My Pictures’ as ‘177.jpg’. The file still exists in this location, with the same file size and appears to be an image of a young yellow chick standing next to an egg with a caption written at the bottom of the image reading ‘Everyone says you’re too young for me.’. See figure 51 for download data and appendix B: Image 1 for the image.

On Thursday 03/02/2005 at 15:02:45 GMT, Doe Downloaded a 4kB .htm file hosted at ‘<http://www.cvm.okstate.edu/instructions/kocan/ostrich/ostbk2b2.htm>’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents’ as ‘ostbk2b2.htm’. The file still exists in this location, with the same file size and appears to be the HTML file for a webpage providing information on how to care for and own birds from chicks, through the juvenile stage into adulthood as well as feeding and housing recommendations. See figure 52 for download data and appendix D for a copy of the contents of the .htm file logged under it’s local file path.

On Thursday 03/02/2005 at 15:04:48 GMT, Doe Downloaded a 58kB .jpg file hosted at ‘<http://people.cornell.edu/pages/sah67/birdtrans2.jpg>’ and saved it to

local directory location ‘C:\Documents and Settings\johndoe\Desktop’ as ‘bird-trans2.jpg’. The File still exists in this location, with the same file size and appears to be a photo of a small bird being held by the wings by a man with its back to the camera. The man is spreading its wings and there appears to be a man-made device of some sort attached to the birds back, possibly a tracker. See figure 53 for download data and appendix B: Image 59 for the image.

On Thursday 03/02/2005 at 15:05:03 GMT, Doe Downloaded a 38kB .jpg file hosted at ‘<http://people.cornell.edu/pages/sah67/chicks2.jpg>’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents\My Pictures’ as ‘chicks2.jpg’. The file file still exists in this location, with the same file size and appears to be an image of 5 newly-hatched, featherless birds huddled on a piece of kitchen roll with a person’s finger prodding the face of the left-most bird. See figure 54 for download data and appendix B: Image 20 for the image.

On Thursday 03/02/2005 at 15:05:44 GMT, Doe Downloaded a 54kB .jpg file hosted at ‘<http://people.cornell.edu/pages/sah67/newbies2.jpg>’ and saved it to local directory location ‘C:\Documents and Settings\johndoe\My Documents’ as ‘newbies2.jpg’. The file still exists in this location, with the same file size and appears to be an image of 4-5 newly-hatched, featherless chicks, they seem to be the same chicks from ‘chicks2.jpg’, huddled together in a feather basket/container. See figure 55 for download data and appendix B: Image 41 for the image.

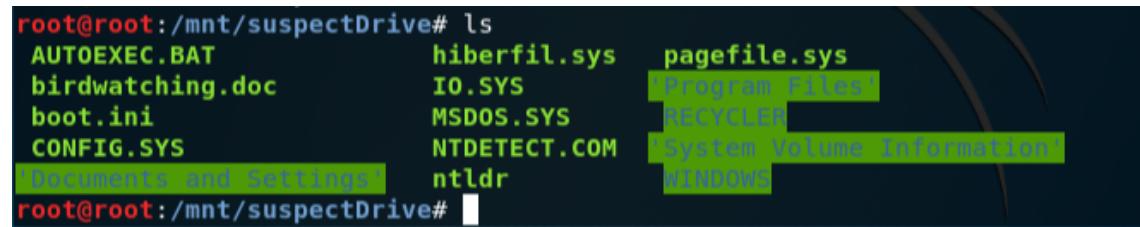
On Thursday 03/02/2005 at 15:06:42 GMT, Doe Downloaded a 77kB .jpg file hosted at ‘<http://people.cornell.edu/pages/sah67/ready2fledge.jpg>’ and saved it to local directory location ‘C:\Documents and Settings\bob\My Documents\My Music’ as ‘ready2fledge.jpg’. The file still exists in this location, with the same file size and appears to be an image of a group of young fully-feathered birds in a wooden crate with the floor lined with feathers and straw. This shows that the presence of the file on Bob’s profile was Doe’s doing. See figure 56 for download data and appendix B: Image 16 for image.

On Wednesday 09/02/2005 at 11:28:00 GMT, Doe downloaded a 1028kB .zip file hosted at ‘<http://www.traveltex.com/downloads/screensavers/birds.zip>’ and saved it to local direcertory location ‘C:\Documents and Settings\johndoe\My Documents’ as ‘birds.zip’. The file no-longer exists in this form within this directory however may have been unzipped into another folder. See figure 57 for download data.

The dates and time on which these downloads occur show that they were obtained over the course of a week, making it very unlikely these downloads were the result of a malicious virus or other code-based attack. The quantity of related contents also rules out the idea that the downloads were unintentional or the result of the suspect being misled or mistaken.

4.2.7 Miscellaneous Documents

A document titled birdwatching.doc was found within the C: Drive of the computer, which means that it could belong to any of the users that access the computer. It was not within any folders and was simply within the root folder of the C: drive. It is possible that this was an attempt to hide the image from the other users or to implicate them within the crime itself. The file contains detailed instructions on how to take part in bird watching in Thailand.



```
root@root:/mnt/suspectDrive# ls
AUTOEXEC.BAT          hiberfil.sys  pagefile.sys
birdwatching.doc      IO.SYS       Program Files
boot.ini              MSDOS.SYS   RECYCLER
CONFIG.SYS            NTDETECT.COM System Volume Information
'Documents and Settings'  ntldr      WINDOWS
root@root:/mnt/suspectDrive#
```

Figure 14: birdwatching.doc within the C: drive

Multiple files relating to birds were found in John Doe's documents folder, seen in figure 15.



```
izzy@debra:/mnt/john1/Documents and Settings/johndoe/My Documents$ ls
aa010703a_files  birdpics.gpg  kakapo.ram  'My Pictures'  newbies2.jpg  stuf.doc
aa010703a.htm    desktop.ini   'My Music'  nestboxtips.txt  ostbk2b2.htm
```

Figure 15: Documents

A text file containing content describing how to maintain a nestbox in the summer called nestboxtips.txt was found in 'My Documents'

aa010703a.htm and aa010703a_files were found to be a saved website and related files on how to build a bluebird box which can be found in Appendix F, figure 27.

There was also a file called kakapo.ram. This file was found to be linked to audio.pbs.org/songs/kakapo.rmd, as seen in figure 16, however this site is no longer active. .ram files are used to stream audio from the internet and kakapo's are a species of bird so it is likely that this file was a birdsong or bird related audio.



```
izzy@debra:/mnt/john1/Documents and Settings/johndoe/My Documents$ strings kakapo.ram
pnm://audio.pbs.org/songs/kakapo.rmd
```

Figure 16: kakapo.ram

An encrypted file, birdpics.gpg, was also found in 'My Documents', as well as multiple bird related images.

Doc1.doc in 'My Music' was found to a doc file containing half an image of a bird.

4.2.8 Encrypted Archive

The encrypted file, `birdpics.gpg`, was found to contain a zip file containing 5 bird images. It can be seen from file names that these were contained in an E: drive which the registry analysis shows is a USB drive that has been connected to the machine.

4.2.9 Registry Analysis

The analysts used a registry forensics tool called, 'MiTec Windows Registry Analysis' which allowed the analysts to navigate the registry information from the accused's hard drive more effectively.

The first thing the analysts found of important detail was the last boot and shutdown times of the machine. This meant that the team were able to accurately identify the end of the timeline for the incident and could then work backwards to see if the accused had carried out any suspicious actions.

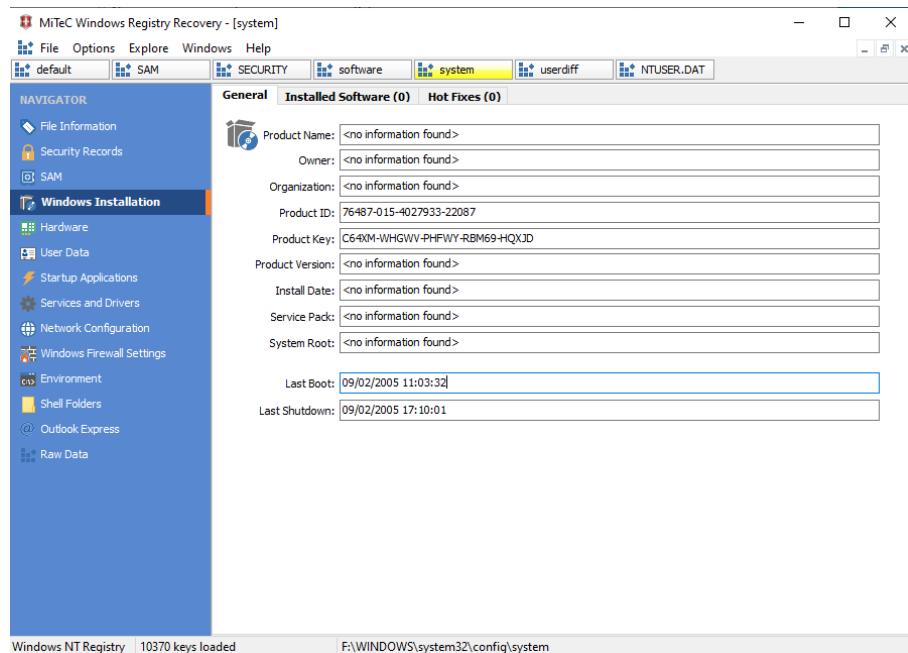


Figure 17: Last boot and shutdown of the computer

The analysts were able to identify the software and hardware that the machine was being used with, as well as using the registry information to identify the software that had been used to encrypt the file with several images and a document within it. This can be seen appendix I in figures 37, 38 and 39.

The analysts also found what removable devices were attached to the machine. This information has been passed onto the relevant teams to see if they are able to recover any removable media from the crime scene in case there is any valuable information or evidence. This can be seen in appendix I figures 40, 42 and 43.

4.2.10 Prefetch Analysis

izzy@debra:/mnt/john1/WINDOWS/Prefetch\$ ls					
ACR032.EXE-13285888.pf	MSCRIPT_INUSE.EXE-04BEDF94.pf	REGSVR32.EXE-25EEF2F.pf	SHMGRATE.EXE-1BA69E68.pf	UPDATE.EXE-1AF0D1BA.pf	
ACR032INFO.EXE-013EA364.pf	MCUPDATE.EXE-361E6FD8.pf	RNXPROC.EXE-1C03A84F.pf	SHSTAT.EXE-2A9CD834.pf	UPDATE.EXE-2913E626.pf	
DEFENC.EXE-13479398.pf	MMC.EXE-0A5AF4A1.pf	RPHELPERAPP.EXE-33CB172B.pf	SVCHOST.EXE-3530F672.pf	UPDATE.EXE-299C11EA.pf	
DEFRAG.EXE-273F131E.pf	MMC.EXE-3D93B3A4.pf	RUNDLL32.EXE-13CC3015.pf	TBMON.EXE-193B8945.pf	UPDATE.EXE-2E63FB5E.pf	
DFRNTFS.EXE-2699670F.pf	MRT.EXE-0847AD6A.pf	RUNDLL32.EXE-169CA248.pf	THUNDE-1.EXE-2874618F.pf	UPDATE.EXE-309AA48CB.pf	
DMADMIN.EXE-00BCB146.pf	MSHTA.EXE-331DF029.pf	RUNDLL32.EXE-18FE9799.pf	TX_BIRDS.EXE-24B103EC.pf	UPDATE.EXE-31ADD2E1.pf	
DRMREMOTE.EXE-2F82C890.pf	MSEXPL.EXE-2F8A8CAE.pf	RUNDLL32.EXE-2576181F.pf	TX_BIRDS.EXE-2861E28C.pf	UPDATEFRUIT.EXE-21775F89.pf	
DRWTSN32.EXE-2B4B524C.pf	MSOHTMED.EXE-1B044AD2.pf	RUNDLL32.EXE-286A7F8C.pf	TX_BIRDS.SCR-03FEBFC4.pf	USERINIT.EXE-30B181A40.pf	
DWMIN.EXE-30875ADC.pf	NOTEPAK.EXE-336351A9.pf	RUNDLL32.EXE-2AF77CC9.pf	UNREGMP2.EXE-07CACB61.pf	WINDOWS-K8890830-V1.1-ENU.EXE-0860773E.pf	
EXPLORER.EXE-082F38A9.pf	NTOSBOOT-B000DF4A.pf	RUNDLL32.EXE-2F26E69F.pf	UPDATE.EXE-016555EF.pf	WINPT.EXE-258D00ABC.pf	
FIREFOX.EXE-17EE503B.pf	NTVDM.EXE-1A18A423.pf	RUNDLL32.EXE-3632F4DF.pf	UPDATE.EXE-01F68CE8.pf	WINPT-INSTALL-1.0RC2.EXE-1309F1BA.pf	
FIREFOX.EXE-28641590.pf	READER.SL.EXE-3614FA6E.pf	RUNDLL32.EXE-4499C56E.pf	UPDATE.EXE-02F1FFC9.pf	WINWORD.EXE-37F6AE89.pf	
GPG.EXE-3205295F.pf	REALONEMESSAGECENTER.EXE-0F115151.pf	RUNDLL32.EXE-44EABC3.pf	UPDATE.EXE-035810C5.pf	WMIAPSRV.EXE-1E2270A5.pf	
HELPVC.EXE-2076DDA2.pf	REALPLAY.EXE-1BF219BD.pf	RUNDLL32.EXE-451FC2C0.pf	UPDATE.EXE-0DFF31E49.pf	WMIHOUSE.EXE-28F301A9.pf	
IE40INIT.EXE-169A5A39.pf	REALPLAY_MOUNTPOINTS.EXE-35C57E1D.pf	RUNDLL32.EXE-470F11BD.pf	UPDATE.EXE-10B5B232.pf	WUAULT.EXE-399A8E72.pf	
IMAPI.EXE-0BF740A4.pf	REALSCHED.EXE-3282FD31.pf	SCAN32.EXE-34BB0851.pf	UPDATE.EXE-10B75175.pf	XPINSTALL.EXE-1DAC9645.pf	
Layout.Ini	REFRESH.EXE-30802498.pf	SETREG.EXE-32F24AA5.pf	UPDATE.EXE-1428FC74.pf		
LOGON.SCR-151EFAEA.pf	REGEDIT.EXE-1B606482.pf	SETUP0.EXE-362FF7C9.pf	UPDATE.EXE-16AE1C01.pf		

Figure 18: Prefetch files

The prefetch files, as seen in figure 18, indicated that the suspect used some programs that could be related to consuming bird related media or covering their digital tracks.

Realplay is an audio player that was found to be used. It could have been used for listening to the bird songs found on the HDD as these were the only audio files found.

Multiple prefetch files for tx_birds.exe were found, indicating this had been run from multiple different locations. The executable was found to be a screensaver of a slideshow containing several images of birds.

Regedit, a tool for editing registry keys, was found to be used. This indicates that John Doe tampered with the registry, but it's not clear in what way.

5 Timeline Reconstruction

17/06/2004 - 27/06/2004

On the 17/06/2004 and the 27/06/2004, the Canon Powershot was used to take a large number of photos - sixteen of these were of birds.

02/02/2005

14:25:59 to 14:26:02, a guide to building a blue bird house website was saved to the machine in John Doe's account

14:28:19, another picture was saved to the machine. "(wbpremium_s.jpg)"

14:29, nestboxtips.txt was created

14:43:35, another image was stored on to the machine (40m.jpg)

14:50:55, regedit was used.

15:11:51, a real player file called kakapo.ram was saved to the machine

15:12:09, doe downloads 'Dawn.ram'

16:25:10, the files found within the encrypted file were saved to the machine.

16:35:10, the software to create the encrypted GPG file was accessed.

16:46:00, birdpics.gpg was created as an encrypted file.

03/02/2005

11:42:20, Df1.jpg and bluebird2.jpg were sent to the recycling bin in the hidden partition

12:22:52, doe downloads 'aggressive_song.wav'

14:17:42, the Doc1.doc that was found in the Music folder in John Doe's account was created and modified.

15:00:19, John Doe downloads 'babyscot_vyoung.jpg'

15:00:27, John Doe downloads 'babyscot_2weeks1.jpg'

15:01:38, John Doe downloads '177.jpg'

15:02:45, John Doe downloads 'ostbk2b2.htm'

15:04:48, John Doe downloads 'birdtrans2.jpg'

15:05:03, John Doe downloads 'chicks2.jpg'

15:05:44, John Doe downloads 'newbies2.jpg'

15:06:42, John Doe downloads 'ready2fledge.jpg'

15:42:16, the three images of people in bird costumes were saved to the machine

09/02/2005

11:08:01, Emails to John Doe from Ben Forbes and mailinglist@birds.example.com were sent.

11:28:00, John Doe downloads 'birds.zip'

13:50:37, a bird related screen saver, tx_birds, was used multiple times

16:56:50, the stuf.doc was created and modified on the machine.

17:04:04, realplay.exe was used.

17:10:01, the machine was switched off and has not turned back on since. This is the end of the timeline.

6 Conclusions

The image based evidence that was recovered from the investigation was a total of sixty ornithological images, as well as three images of cartoon bird costumes, and images of bird related images such as a bird house, bird seed, comics and images of humans interfering with birds and other creatures in their natural habitat.

The analysts also identified that John Doe had been in contact with another person and has been distributing images of baby birds through email with 'Ben Forbes', the analysts were able to use these images to identify that John Doe has taken some images of baby birds with his personal device.

The suspect has also accessed sites that are hosting information and/or pictures of birds, which means that the accused has accessed the internet and these sites in order to obtain and possess illicit ornithological material.

From the email exchange with Ben Forbes as well as the fact that many of the images found were taken from the suspect's camera, it appears that the suspect and several other people took part in a birdwatching trip. Doe then stored the images from this trip on his computer.

John Doe has went to great lengths to hide this content and has attempted to hide some of these images in disk space within a partition that wasn't written in MBR which means it would not be found on the computer's normal memory, as well as on a removable USB device. The suspect also tried to hide several images through using encryption which, without knowing the password, would have been hidden.

In conclusion, the accused has a large amount of illegal content within his possession, which has been identified throughout the investigation. There is a reasonable amount of evidence against the accused to suggest that they are in offence of creating, distributing and possessing illicit ornithological material.

7 Contributions

Isabella -

1. Disk Imaging
2. Miscellaneous Documents
3. Encrypted Archive
4. Prefetch Analysis
5. GPG Decoding

Aidan -

1. Emails
2. Internet Forensics
3. Browser Analysis
4. Image Forensics
5. Timeline Reconstruction (Browser)

Tia -

1. Physical Searching
2. File Carving
3. Registry Forensics
4. Autopsy Reports
5. Timeline Reconstruction

8 Equipment Required for Court Proceedings

The equipment that is required in order to present the evidence to the court on a date that has yet to be confirmed, includes:

Items required to be provided by the court:

- Projector OR Television
- HDMI Cable
- Power Cables

Evidence to be displayed in court.

- Machine taken from John Doe's residence
- Canon Powershot SD100
- John Doe's Hard Drive
- John Doe's Keyboard and Mouse
- Power Cable for John Doe's machine
- John Doe's Monitor

Hardware - Items that will be brought in to the court to display evidence:

- Machine from the Digital Forensics Lab with Linux Ubuntu Software
- Keyboard
- Mouse
- Monitor
- Write blocker
- SATA Cables

Software - Software that will be used in the court to recreate steps taken to recover evidence:

- MD5 hash command line feature to confirm that the hash is the same on the image as it is the Hard Drive
- Autopsy

- testDisk
- photoRec
- MiTec Windows Registry File Viewer
- Internet Archive: Wayback Machine (<https://archive.org/web/>)

Appendices

A Chain of Custody Documentation



Figure 19: Hard Drive recovered from the crime scene



Figure 20: USB Device being used as copy of best evidence

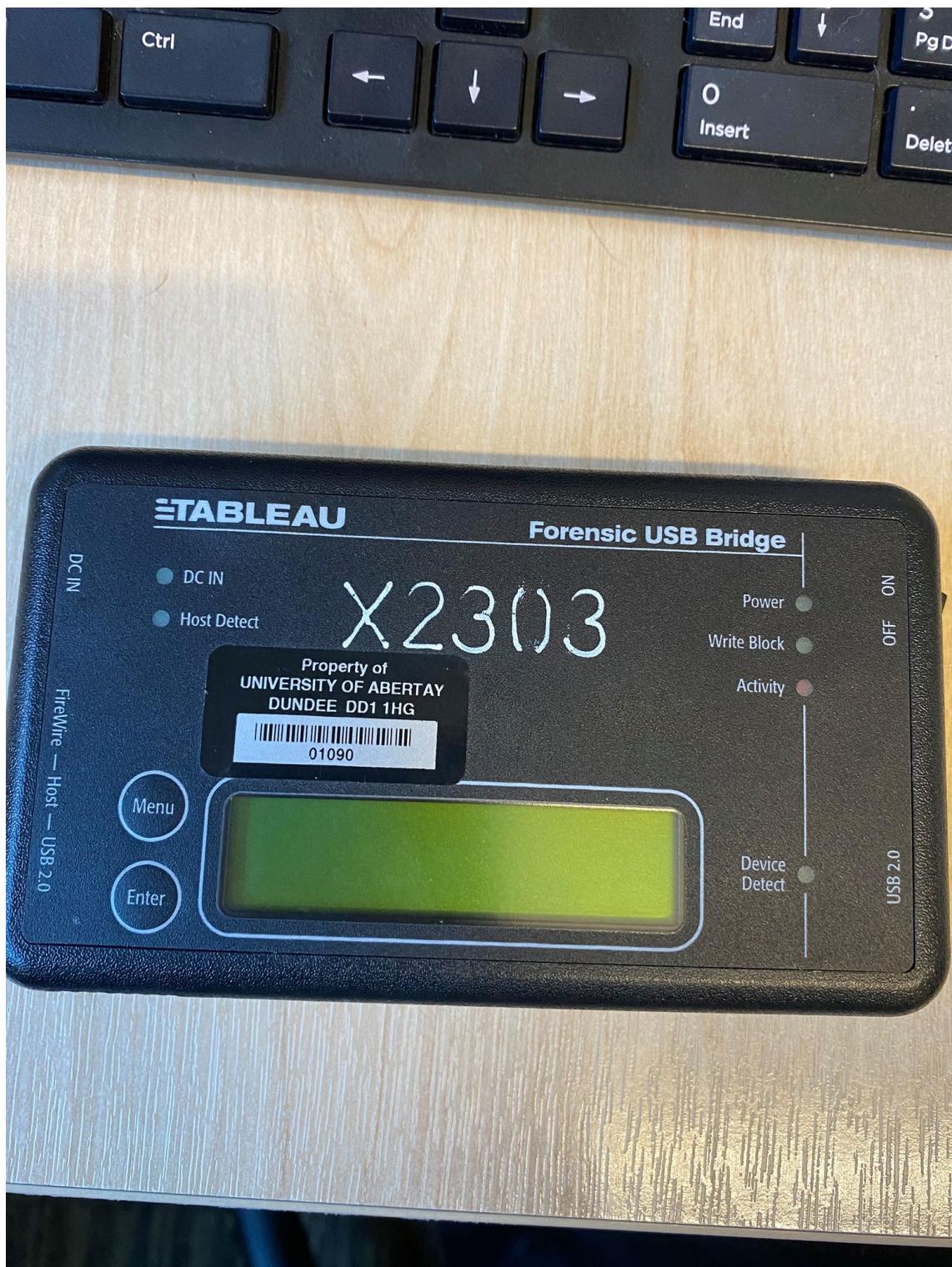
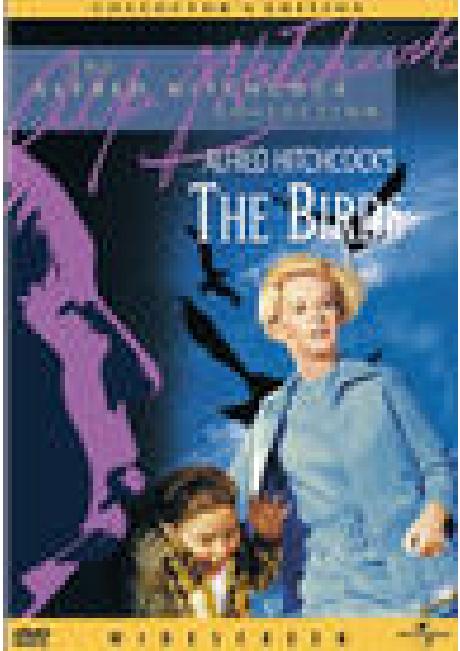


Figure 21: Write Blocker used for disk imaging.

B Bird Images

1		177.jpg
2		colorful-birds.jpg
3		f5475888.jpg
4		f2791440.jpg

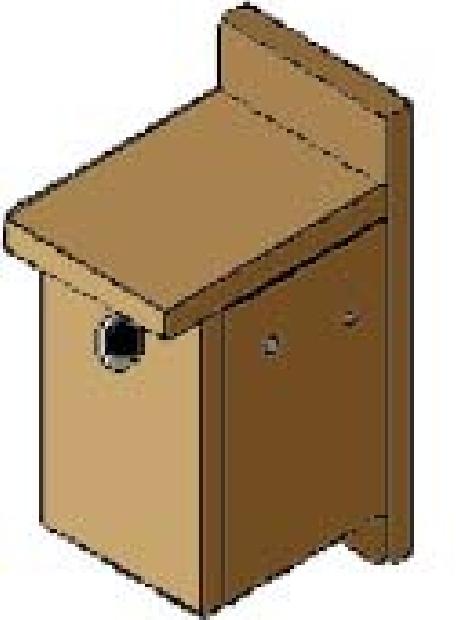
5	 A photograph of a Great Blue Heron in flight, captured from a low angle looking up. The bird's long legs are extended downwards, and its wings are partially spread. The background is a clear blue sky.	AlmondMarshGreatBlueHeronStalling.jpg
6	 The cover of a children's book titled "The Birds" by Alfred Hitchcock. The cover features a woman in a blue dress and a child in a yellow hat looking at a small bird. The title is written in a stylized font, and the author's name is at the top. The background is dark with some purple and blue elements.	40m.jpg
7	 A photograph of a Junco bird resting on the ground. The bird has dark, speckled feathers and is facing towards the camera. The background is a natural, outdoor setting with some leaves and twigs.	junescreen01.jpg

8		gawall8.jpg
9		frankbeecostume_1827_96360352.png
10		f3181864.jpg

11		ImmatureSnowyEgretTakingOff.jpg
12	 <small>© Tim Gallagher</small>	brd_Ornithologist_TWG.jpg
13		BlackNeckedStiltsFromBehind.jpg

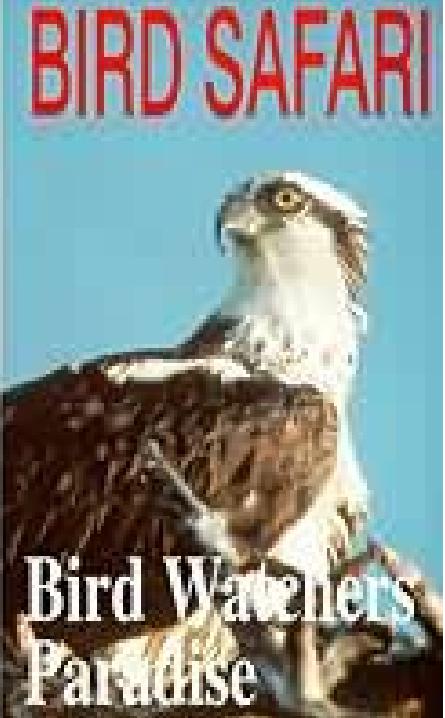
14	 <p><i>Nesting red-winged blackbird/ Carouge à épaulettes en cours de nidification Mike Hopiak / Cornell Lab of Ornithology</i></p>	glfs-storm-birds.jpg
15		GreatEgretOverflyingRoseateSpoonbills.jpg
16		ready2fledge.jpg

17	 A black vulture is perched on a weathered wooden post, its wings spread wide in a sunning or preening position. The background is a soft-focus landscape of green and yellow vegetation.	BlackVultureSunningOnPost.jpg
18	 A person wearing a straw hat and a dark vest over a light shirt is standing on a wooden dock or pier, looking through binoculars across a calm lake towards a forested shoreline under a clear blue sky.	f3241816.jpg
19	 Two vibrant red and blue parrots are perched inside a white wire cage. The cage is placed on a light-colored surface, and the background shows a window with green shutters.	7EYBTELF1KAN.jpg
20	 A close-up view of several small, newly-hatched chicks. They have pinkish-orange bodies with dark, mottled patterns on their heads and wings. A human finger is visible on the left, gently holding one of the chicks.	chicks2.jpg

21	 A Bellbird, a small green bird with a yellow belly, is captured in mid-air as it jumps off a brown, textured branch. The background is dark and out of focus.	BellbirdJumpingOffBranch.jpg
22	 A bluebird house, a wooden nesting box with a blue exterior and a brown roof. It features a circular entrance hole and a small perch below it.	bluebirdhousepic.jpg
23	 A seagull is captured in mid-air, its wings spread, as it feeds on a fish held in its beak. The background shows a body of water and a distant shoreline.	BC7 feeding the birds.jpg

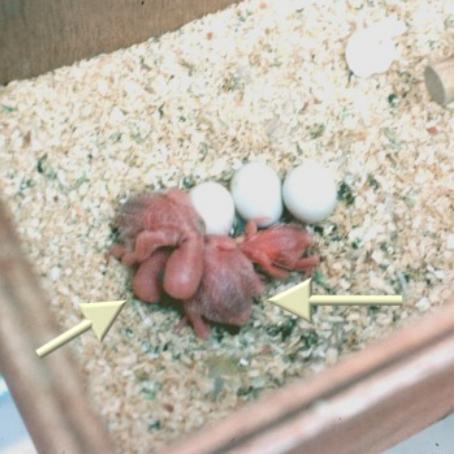
24	 A bald eagle is captured in mid-flight, its wings spread wide. It is positioned above a body of water, with its white head and tail contrasting against its dark brown body and wings.	BaldEagle7oClock.jpg
25	 A person wearing a tan jacket is holding a small bird in their hands. The bird has iridescent blue and green feathers on its wings and tail. It appears to be a young or recently fledged bird.	f2962576.jpg
26	 A small bird with a dark cap and a light-colored belly is perched on a dark, textured branch. Its long, deeply forked tail is a prominent feature. The background is a soft-focus green.	image_0.jpg
27	 A close-up photograph of a green heron's head and neck. The bird has a long, sharp beak and a pinkish-purple patch of skin around its eye. Its feathers are a mix of grey, pink, and purple.	GreenHeronCloseup.jpg

28		f3185696.jpg
29		f3112440.jpg
30		frankbeecostume_1827_84985892.png

31		7107298.jpg
32		blue_bird2.jpg
33		snow_geese.jpg

34		babyscot_2weeks1.jpg
35		Df1.jpg
36		BarnOwl.jpg
37		june03screen.jpg

38		KeaAndMountain.jpg
39		IMG_3937_filtered.jpg
40		GreenHeronOnChicagoLakeshore.jpg
41		newbies2.jpg
42		KeaEatingRentalCar.jpg

43		frankbeecostume_1827_34457581.png
44		babyscot_vyoung.jpg

45		f3538912.jpg
46		wbpremium_s.jpg
47		BlackSwan.jpg

48		tn_duck_3.jpg
49		f2792088.jpg
50		f3188768.jpg
51		AmericanWhitePelicansCircling.jpg

52		f2903488.jpg
53		AmericanAvocetWinterPlumage.jpg
54		f3180728.jpg
55		f3343344.jpg

56		f3074280.jpg
57		GreatEgretInVoloBog.jpg
58		KeaRetrievingBakedBeanCanFromTarn.jpg
59		birdtrans2.jpg

60



KeaAtTopOfMacKinnonPass0930.jpg

C Canon Photos

1		f3528344.jpg
2		f3518376.jpg
3		f3516648.jpg
4		f2997432.jpg

5		f3163600.jpg
6		f3088168.jpg
7		f3559360.jpg
8		f3030208.jpg

9	 A photograph showing two men in a grassy yard. The man on the left, wearing an orange and blue shirt and light-colored shorts, is in the middle of a badminton serve. The man on the right, wearing a dark blue shirt and jeans, stands with a racket. A blue lawn chair and some trees are in the background.	f3541128.jpg
10	 A photograph showing two people in a grassy yard. A man in an orange and blue shirt and light-colored shorts stands on the left, and a woman in a red shirt and white shorts stands on the right, both holding rackets. They appear to be playing badminton. A pond and trees are in the background.	f3114432.jpg
11	 A photograph showing two people sitting in wooden lawn chairs on a grassy lawn. The person on the left is wearing a red shirt and light-colored shorts, and the person on the right is wearing a dark blue shirt and light-colored shorts. They are both wearing sunglasses and appear to be relaxing.	f3477344.jpg
12	 A photograph showing two men standing outdoors in a garden setting. The man on the left is wearing a dark grey long-sleeved shirt and light-colored pants, holding a dark bottle in his right hand. The man on the right is wearing a light grey short-sleeved shirt and blue jeans. They are standing near a white table with some items on it.	f3018600.jpg

13		f3062200.jpg
14		f3181240.jpg
15		f3499032.jpg
16		f5180864.jpg

17		f3393104.jpg
18		f2952752.jpg
19		f3593928.jpg
20		f3348112.jpg

21		f3673560.jpg
22		f3222704.jpg
23		f5063672.jpg
24		f3420608.jpg

25		f3665296.jpg
26		f3018088.jpg
27		f2815016.jpg

D Documents

C:/birdwatching.doc

“BIRDWATCHING IN THAILAND

Feathered Magic from Mangroves to Mountaintops by Antony Lynam

One of the great attractions for nature tourists visiting Thailand is the diversity of environments extending across mountain peaks, lowland rainforests, mangroves, coral reefs, farmland and urban jungles. Within a day, or even a few hours travel, one can easily make the transition between these places and witness natural marvels large and small.

For wildlife enthusiasts no group maintains interest and pleasure more than birds. While special efforts are required to see in the wild charismatic species such as elephants and primates, birds are found across the entire spectrum of environments from pristine to severely degraded areas. Part of the attraction for birds lies in their diversity. Nine hundred and seventy eight bird species have been recorded in Thailand, approximately 10% of the world's total. At the Isthmus of Kra between latitudes 11 and 13N, a major biogeographic transition between Indochinese and Sundaic forests produces a special diversity of birds with a total of 152 species of birds reaching the northern or southern range limits of their geographic ranges. Two-thirds of Thai birds are residents, the remainder are seasonal visitors. Locations where migrants congregate, often in large numbers, are highly accessible making Thailand a special destination for birdwatchers. Many birds are susceptible to human disturbance because they have small geographic ranges, a result of specific habitat requirements. For example, Deignan's babbler - a non-descript forest bird is found on Doi Chiang Dao and nowhere else in the world. Gurney's pitta are only found in lowland rainforests. Fewer than 30 birds remain in the last known population in Thailand at Khao Nor Chuchi, Krabi. Efforts by local and international conservation agencies strive to increase protection efforts and reafforest areas encroached by rubber farmers, though time is running out. With approximately 20% of the birds found in Thailand being globally or regionally endangered species, this makes the country a birdwatching haven for bird enthusiasts.

IDENTIFYING BIRDS

Birds are distinguished first by their size and shape. They range from diminutive flowerpeckers, sunbirds and white-eyes, about the size of your index finger, to lanky storks and egrets that stand almost a metre tall, and Green peafowl with its spectacular 2m tail. The form of the beak offers vital clues about the bird's diet. For example a thin curved tube for sipping nectar or a sharp hook for tearing flesh. The pattern and colour of plumage can tell apart the sexes as in pheasants where males are bright and striking, and females are drab and dowdy. By far the most useful character for identification is a bird's voice. This is especially true in forests where on average 90% of birds are hidden from view. The most experienced

birdwatchers in the tropics know their songs and calls.

BEST TIMES TO SEE BIRDS

The nesting season is a good time to be watching birds. During this most active time in a bird's life a variety of vocalizations and behaviours are exhibited. In Thailand, as in other tropical countries, the nesting season coincides with the period when food is in abundant supply. A bird expends much energy in courting, mating, incubating eggs, defending a nest and feeding offspring. Most birds nest during the transition between dry and wet seasons when new leaves and grass shoots sprout. This occurs from February to June. Certain birds depend on the availability of water and nest throughout the rainy season. Migrants are best observed during their passage into or out of the country, or as they pass through on their way to other places. Most conspicuously, half a million ducks spend their winter in Thailand, feeding and resting in watery roosts from Chiang Saen to Thale Noi. Thousands of garganey and Lesser treeduck flock during January and February. Shorebirds like sandpipers, stints and plovers migrate long-distances between nesting grounds in Eurasia and tropical Asia and wintering grounds in Australasia. They stop to feed in Thailand's mudflats and mangroves during September to May where they stock up on invertebrates and crustaceans. During October, the southward migration of hawks over peninsular Thailand is an avian spectacle. Chinese goshawks, Japanese sparrowhawks, crested honey buzzards, black bazas, and others are seen coasting on thermals in their thousands daily. Less conspicuous is the blue-winged pitta, a ground dwelling bird that arrives with the rains to nest in deciduous and bamboo forests, and escapes the hot season for the wetter forests of Malaysia and Sumatra.

WHERE TO FIND BIRDS

Given that many birds are denizens of certain times, places, habitats or seasons, the amateur naturalist can remember them by association.

PARKS, TEMPLES AND GARDENS

Some species like barn swallows, magpie robins, mynas and starlings can be found around Bangkok and environs. Lumpini Park, a heavily-used green area in the city centre supports a variety of birds with over 90 species having been recorded there. Temples near Bangkok and Ayutthaya preserve pockets of the natural landscape including birds such as black kites, parakeets and woodland birds that are characteristic of the habitats.

RICE PADDIES, MARSHES AND PONDS

Rice paddies, marshes and ponds away from built-up areas support breeding populations of Asian openbill stork and many other waterbirds. Key sites: Suphan Buri-Ayutthaya and Beung Boraphet.

PEAT SWAMP FORESTS

Almost the last vestige of Thailand's peat swamp forest at Phru To Daeng or Chalerm Phrakiat Wildlife Sanctuary in Narathiwat supports Lesser adjutants, a

kind of stork, along with several birds characteristic of Sundaic forests.

LAKES, RIVER SANDBANKS AND REEDBEDS

Lakes, river sandbanks and reedbeds preserve unique assemblages of wintering waterfowl and perching birds. Key sites: Chiang Saen, Fang Hot Springs, and Thaton.

AGRICULTURAL LANDSCAPES

Agricultural landscapes across the country support species that tolerate human presence and include kites, rollers, bee-eaters, coucals, weavers and bulbuls.

SANDY BEACHES, MANGROVE AND TIDAL FLATS

Sandy beaches are attractive to tourists but are barren habitats for birds, while little-visited mangroves and tidal flats that are rich in nutrients and microorganisms, are favoured feeding haunts for migrant waders. Some birds like the Brown-winged kingfisher and Mangrove pitta, are entirely restricted to mangroves while Mangrove whistlers and flyeaters rarely leave the area. Key sites: Samut Sakhon, Ban Laem in Petchburi, and Krabi.

OFFSHORE ISLANDS

Offshore islands such as Phi Phi, Libong, Surin and the Similans support fewer species than similar sized mainland habitats but some such as Nicobar and Pied Imperial pigeon are entirely restricted to these refuges.

SEASCAPES

While there are fewer seabirds in the warm Thai waters compared with those in the northern and southern hemispheres, frigate birds, skuas, boobies, and terns are among the rewards for marine birders.

FORESTS

Most resident Thai birds depend upon forests for their survival. Rainforests in the extreme south support the greatest avian diversity, while seasonally dry dipterocarp, mixed deciduous and evergreen forests in the centre and north. Key sites: Khao Yai National Park, Kaeng Krachan National Park, Khao Soi Dao, Nam Nao National Park, Khao Nor Chuchi, Ban Nai Chong, and Hala Bala Wildlife Sanctuary.

MOUNTAINS

Sibias, minlas, and laughing thrushes are relatives of species found in the Himalayas and southern China, and can only be found in mountain forests. Following surveys of high mountain peaks in the last decade, at least 20 new species or 2% of the total have been added to the lists for Thailand. Key sites: Doi Pha Hom Pok, Doi Chiang Dao, Doi Inthanon, Doi Ang Khang, and Doi Suthep.

By visiting these enchanting destinations, travellers can appreciate the avian wonders that Thailand offers and better understand the importance of the wild and not so wild areas that preserve them.

Contact information: Bird Conservation Society of Thailand (BCST)*
69/12 Soi Ramindra 24, Joorakaebau, Ladprao, Bangkok 10230, Thailand
Email: bcst@box1.a-net.net.th

Tel: 66-(0)-2943-5965

Web sites:

www.bcst.org/index_ebird.html

www.thai.net/bcst

* The Bird Conservation Society of Thailand (BCST) is a BirdLife Partner
Oriental Bird Club (OBC)
c/o Uthai Treesucon, 723/1 Mu 2 Soi Ram Intra, Joorakhaebua, Bangkok 10230.
E-mail: utree@loxinfo.co.th
mail@orientalbirdclub.org

Web site: www.orientalbirdclub.org

Wildlife Conservation Society - Thailand Programme

P.O. Box 170, Laksi, Bangkok 10210

Tel: +662-503 4478, +662-503 4479

Fax: +662-503 4096

Email: thailand@wcs.org

Reference information:

Field guide

Robson, C. 2002.

A field guide to the birds of Thailand.

Asia Books, Bangkok. 272pp.

TAT PUBLICATIONS ON NATURE TOURISM

For more information on birdwatching in Thailand, please refer to the following nature tourism guide books in the "National Park" series published by the Tourism Authority of Thailand as part of the Tourism and Employment Creation Plan implemented under the Social Investment Project.

- KHAO YAI: DONG PHAYA YEN FOREST RANGE ISBN 974-8252-70-1
- KAENG KRACHAN: Amazing Forest of Phetchburi River ISBN 974-8252-72-8
- KHAO SOK Fascinating Limestone Mountains Amid The Verdant Forest of Surat Thani, Thailand ISBN 974-679-099-4
- DOI INTHONON - DOI SUTHEP The Himalayan Springs of Thailand SBN 974-8252-67-1

· PHU LUANG The Kingdom of Plants ISBN 974-8252-73-6

BIRDWATCHING TIPS · Consult field guides, checklists, and maps prior to arriving at the birdwatching destination.

- Dress in colours that blend in with the surroundings.
- Bring appropriate equipment such as telescope, bird guide, and a notebook.
- Plan to arrive at the destination at sunrise when birds are first out in search for food and are most active.
- Walk slowly stopping at intervals to listen for calling birds.
- Look for the birds in thickets, on the branches of trees, and on the ground.
- Avoid talking, smoking, or walking on dry leaves, all of which will scare birds away.

CONSERVING BIRD DIVERSITY

Across the world, humans coexist with birds but human activities often affect the survival prospects for birds. Forty-eight species of birds found in Thailand (5% of the total) are globally threatened by the loss or disturbance of their habitats, food resources, and breeding areas, and by other human actions, and so require special conservation attention. A further 97 species (10%) are potentially threatened if current trends persist. In Thailand, 101 species (10% of the total) are hunted as pests, for food or for the pet trade and are directly threatened by humans. The list of hunted species includes waterbirds, birds of prey, pheasants, parakeets, pigeons, hornbills, pittas weavers, bulbuls, and other forest birds. Worldwide the trade in birds includes 2,600 species and several million birds each year. Ten percent of threatened birds worldwide are affected by the bird trade.

There are a number of ways in which the numbers and distribution of threatened birds are being restored. Habitat conservation programmes are an important mechanism. Feeding habitats for seasonal migrants are being preserved by incorporating mangroves and coastal tidal areas in marine protected areas. Lowland forests that support Gurney's pitta and other diversity are being protected and a reafforestation programme planned. Preventing encroachment around the edges of parks maintains the integrity of forest blocks used by the majority of native birds, including migrant raptors and songbirds. In most cases, preserving and protecting natural habitats can bring back even highly endangered populations of rare birds. These measures are relatively cost effective to implement. As an example, a 3-year Khao Yai Conservation Project preserved over 2,000 sq km of wildlife habitat, discouraged poaching, and provided employment alternatives for local forest resource users, at an annual cost of 7 million baht (US\$171,000).

For critically endangered species, whose populations are extremely small, and whose survival in the wild is uncertain due to factors that simply cannot be controlled, other more costly measures such as captive breeding, are being considered. Captive breeding is risky because birds need to be recovered from the wild to establish breeding populations, and injury is possible. Some species do not breed well in

captivity because their natural courting and nesting behaviours are no longer possible. Strict controls on who is allowed to breed endangered species, registration of individuals, and enforcement of laws so that commercial sale is not possible, need to be adopted. Without these controls, captive breeding programmes cannot succeed.

HOW YOU CAN HELP IN THE CONSERVATION OF BIRDS

Visitors to Thailand can assist efforts to preserve and maintain the diversity of birds and their habitats simply by visiting national parks and other wilderness areas. Bird enthusiasts can report the species they observe to authorities. Checklists are now available at many popular national parks. Tourists can report evidence of suspicious activity that might lead to the arrest of unscrupulous individuals trapping or hunting birds and can also participate as volunteers in habitat conservation programmes. In these ways, tourists can help reduce the threats to birds, and at the same time enjoy Thailand's birdwatching paradise.

Contact information: TO REPORT BIRD SPECIES OBSERVED

· TO REPORT BIRD SPECIES OBSERVED

Please contact the Park Visitor Centre of the National Park or Bird Conservation Society of Thailand (BCST)*

69/12 Soi Ramindra 24, Joorakaebau, Ladprao, Bangkok 10230, Thailand

Email: bcst@box1.a-net.net.th

Tel: 66-(0)-2943-5965

Web sites:

www.bcst.org/index_bird.html

www.thai.net/bcst

* The Bird Conservation Society of Thailand (BCST) is a BirdLife Partner

· TO REPORT EVIDENCE OF SUSPICIOUS ACTIVITY

Please contact

Wildlife Protection and Suppression Office

Department of National Parks, Wildlife, and Plant Conservation

61 Paholyothin Road, Chatuchak, Bangkok 10900

Tel: 66-(0)-2579-5266

· HABITAT CONSERVATION VOLUNTEER PROGRAMMES

Please contact

Wildlife Conservation Society - Thailand Programme

P.O. Box 170, Laksi, Bangkok 10210

Tel: +662-503 4478, +662-503 4479

Fax: +662-503 4096

Email: thailand@wcs.org

FAMILIES OF BIRDS IN THAILAND UNDER THREAT

The following bird species are under threat because there is a high demand for them and they are hunted for the local, regional and global bird trade. To help preserve the species, please refrain from purchasing any of the following birds as pets, and if you happen to witness any of the following birds being sold or traded, or note any suspicious activities involving them, please contact:

The Wildlife Protection and Suppression Office

Department of National Parks, Wildlife, and Plant Conservation

61 Paholyothin Road, Chatuchak, Bangkok 10900

Tel: 66-(0)-2579-5266

Phasianidae (wood partridges and pheasants) - 4 species

Anatidae (White-winged duck) - 1 species

Picidae (woodpeckers and barbets) - 3 species

Bucerotidae (hornbills) - 7 species

Upupidae (Common hoopoe) - 1 species

Cuculidae (Coral-billed ground cuckoo) - 1 species

Psittacidae (parrots and parakeets) - 4 species

Columbidae (pigeons) - 12 species

Accipitridae (birds of prey) - 9 species

Threskiornithidae (White-shouldered ibis) - 1 species

Ciconiidae (Lesser adjutant) - 1 species

Pittidae (pittas) - 3 species

Irenidae (Asian fairy bluebird and leafbirds) - 6 species

Corvidae (jays, crows, magpies, orioles and minivets) - 14 species

Muscicapidae (thrushes, robins, and sharmas) - 3 species

Sturnidae (starlings and mynas) - 3 species

Paridae (Yellow-cheeked tit) - 1 species

Pycnonotidae (bulbuls) - 7 species

Zosteropidae (Japanese white-eye) - 1 species

Sylvidae (laughing thrushes, mesias, minlas and sibias) - 8 species

Nectariniidae (Scarlet-backed flowerpecker) - 1 species

Passeridae (weavers and munias) - 7 species

Fringillidae (grosbeaks and buntings) - 3 species

About The Author

ANTONY LYNAM

Antony Lynam (Ph.D.), Wildlife Conservation Society (WCS)- Thailand Programme Director and conservation scientist, works with the Thailand Department of National Parks, Wildlife and Plants to develop programmes for the conservation of the country's endangered species, park resources management, and the design and conduct of training curriculum for park rangers.

An Australian citizen, he has authored a number of technical papers and popular articles concerning conservation issues in Australia, North America, and Thailand, and was a contributor to the seminal volume on habitat fragmentation "Tropical Forest Remnants: Ecology, Conservation and Management". He writes frequently on natural history for magazines, journals and newspapers including Wildlife Conservation, The Nation, The Bangkok Post, and The Natural History Bulletin of The Siam Society."

C:/documents and settings/john doe/stuf.doc

"Dear Sir

Further to our conversation everything we have discussed has been done

Yours faithfully

John Doe"

C:/documents and settings/john doe/nestboxtips.txt

"Tips for Nest Boxes this spring/summer

If you have old boxes in your garden, clean out any of last years nesting material or any old bits of food that may have been stored in there.

If you are putting up new nest boxes make sure that they are out of the reach of cats and Squirrels.

Check that the box isn't in full sun otherwise young birds may literally bake in the heat.

Experiment with different kinds of bird boxes – the open-fronted "Robin" boxes may even attract Spotted Flycatchers.

Make sure any boxes are at least 15mm in thickness.

Face boxes away from prevailing winds.

Don't put nest boxes to close together in a small area as this will only lead to territorial fights.

Always make sure that there is enough food and fresh water made available close by.

Do not put bird boxes with perches attached – the birds do not need them and it may only invite predators.

Never buy a bird table with a nest box built in, as nesting birds will only come into conflict with feeding ones.”

Hidden Partition - guide.doc

“An Insider’s Guide to Enjoying Your First Birding Field Trip by Pete Dunne

Field trips are a lot like going to a dance, and there are two schools of thought. You can just waltz onto the dance floor and let the other person lead or you can learn a few basic dance steps beforehand. Here, for those who want to get a jump on etiquette, are some of the basic rules of the birding field trip. Learn them, and you’ll spend more time birding and less time tripping over your feet.

- Rule 1 - Never miss an opportunity to use a restroom. Your capacity for birding may be limitless but your bladder is not. Some leaders are generous with their planned rest stops; some are miserly. Whenever the group arrives at a planned rest stop, take full advantage (and mind your coffee consumption between stops).
- Rule 2 - Familiarize yourself with whatever pre-trip information is sent. Most organized field trips come with instructions. In the pre-trip material, you will almost certainly find the answers to your most pressing questions: dress, equipment needs, time commitment, lunch plans. Being prepared is the first step toward having a great time.

Re: Clothing. Rule of thumb: In winter, if in doubt, just bring it. In hot weather, cover up for sun protection-this means hat, long-sleeved cotton shirt, long pants. At any time of year, avoid bright colors, particularly white. In the universal language of wild creatures, white means ”Danger! Watch Out! Hide ! It’s not the message you want to send.

- Rule 3 - Don’t be late. When you join a group, you sacrifice a measure of self-determination. One of the quickest ways to annoy the group leader and everyone else, is to arrive late and delay the group’s departure.
- Rule 4 - Don’t wander off. The second quickest way to annoy the group leader is to wander off. You don’t want to be left behind and you don’t want to be the focus of an unnecessary search. If you plan to leave the group, for a short time or for the balance of the day, be certain you inform the leader.

It is in your interest to stay close to the leader and the more experienced members of the group so that you can rely on their knowledge and bird-finding skills.

Staying close applies to car caravanning, too. The rule of thumb is one car length back for every ten miles per hour of velocity. Thirty miles per hour; three car lengths behind the bumper ahead of you. Sixty miles per hour; six lengths. Don’t

trust yourself to keep the pace? Don't drive. Car-pool with someone else.

- Rule 5 - Come prepared. If the trip involves driving, make sure you have enough fuel to see you through. If the instructions state "bring lunch," don't assume that you'll be able to stop at a convenience store to pick up a sandwich. Do that, and you'll likely be eating alone.
- Rule 6 - Check out your equipment before the trip. The single greatest frustration first-time trip goers face is not inexperience, but rather the lousy or malfunctioning equipment - usually optics.

If your binoculars aren't working, ask whether a loaner is available. If you don't own binoculars, do not rush out to the nearest discount store and buy some for the trip. People who do this usually end up with instruments they soon replace. Borrow binoculars for the trip. Use your field trip experience to see what instruments experienced birders are using in order to make an educated purchase later.

- Rule 7 - Speak Softly. Human voices put wildlife on alert. Talking may also prevent a leader from hearing songs or calls and keep you from hearing instructions. Field trips are social and conversation is part of the field trip experience. If you want to converse, do so in whispers or stand away from the group.
- Rule 8 - Keep motion to a minimum. More than sound, birds react to motion. In close proximity to birds, don't move quickly and above all do not advance until the leader gives the word. Want to draw the ire of a group? Walk toward "the bird of the day" and scare it away.
- Rule 9 - Don't monopolize the leader. Sure you have questions. Sure you want to get to know the leader, and you want them to come to recognize your wonderful qualities, too. One of those qualities should be deference, because everyone in the group shares your ambition. Deference extends to use of the spotting scopes, too.

When the leader trains his scope on an interesting bird, and you were first to get a glimpse last time, defer to others the next several times. No matter what your place in line, first looks through a scope are quick looks. After you get an identifying glimpse, step quickly aside for the next person. If the bird is moving, reposition the scope so the next user won't have to pan back and forth. After everyone has had their glimpse, more leisurely viewing is possible.

- Rule 10 - Do ask questions. Leaders want to share their knowledge, and questions are the catalyst that unlocks it. Don't be intimidated by what you don't know or what you presume that others know. Chances are your question is shared by others in the group. You may not be the leader, but if you trigger the answer to a question that some other member of the group was too shy to utter, you'll be their hero. That's it. All you need to know to get the most out of your first field trip experience. If it seems like too much to remember, just remember Rule 1. At any other time, there will be someone else around to ask for assistance.

This guide has been reproduced with the permission of Pete Dunne. Minor editing by Ron Bourque."

“FACILITIES

CHICKS

Young chicks can be maintained in a variety of suitable facilities. A small portable pen, 12 feet long, 4 feet wide and 2 foot high can be adequate for a number of chicks. The pen is placed on short cut grass and moved daily. Chicks are brought out to the pen after the temperature reaches above 60 F and the sun is shining. Birds can be maintained in this type of facility until the temperature drops or until weather is prohibitive. Include some type of shade and wind break as young birds are sensitive to extreme sun and wind.

Young birds should be brought indoors in the evening and maintained in a heated environment until at least 2 to 3 months of age. Temperature in indoor shelters should be maintained at least 65 F and enough room to allow the birds to exercise should be provided. In areas where weather is more severe, this period may need to be extended.

Do not provide feed at night but available water is acceptable. Feed the young birds as outlined in CARE OF YOUNG BIRDS section, prior to turning them out in the morning.

JUVENILES

Juvenile birds between 3 and 10 months of age can be maintained in a similar, but larger facility as young birds. For convenience, access to the indoor facility should be available directly from the outdoor pens. However, shelter is not needed except in extremely cold areas. The amount of space per bird, for both indoor and outdoor facilities should be increased for this age bird as compared to that available for younger chicks. Outdoor pens can be of any type of substrate but ground cover such as grass, clover, or alfalfa is ideal. Grass should be kept at a closely mowed level, especially when grass begins to dry out or turn to seed, as impactions are more common at this time. Daily mowing may be necessary during some periods of the year.

ADULTS

Pens and facilities for adults vary considerably. Most ranchers maintain adult pairs or trios in facilities that range from five thousand square feet to an acre or more. In general, the more room that can be provided, the better the situation. Common fences and line of sight access to neighboring pairs is often desirable but may not be practicable with overly aggressive males.

Housing or shade is usually provided although not always utilized. If birds are accustomed to being fed and watered in a shed they will be more easily confined when necessary and may build the nest and lay indoors. Alley-ways for movement of birds from pen to pen, access for haling, and provisions for confinement for veterinary care should be considered at the time of construction. Although surprising,

most ratites do not require indoor shelter once over 6 months of age and often refuse to use such structures, independent of weather.

Fencing is dependent on personal preference and economics. Chain link is good but may result in problems related to leg and foot injures and is not easily climbed if escape from the pen by egg gatherers is necessary. Tubular "cattle" type fence is suitable and offer some benefits and others types of woven wire fencing are routinely used.

Many ranchers are now utilizing group pens consisting of several males and numerous females in larger acreage. This appears to provide some benefits and is more nearly similar to a natural situation. Early results indicate that increased fertility, more egg numbers, and extended laying periods can be expected in this type of set up. Several acres of enclosed pasture are needed for this type of operation.

Difficulties with a group breeding situation include the inability to determine exactly the resultant chicks parentage.

Ostrich Book"

E PDF's

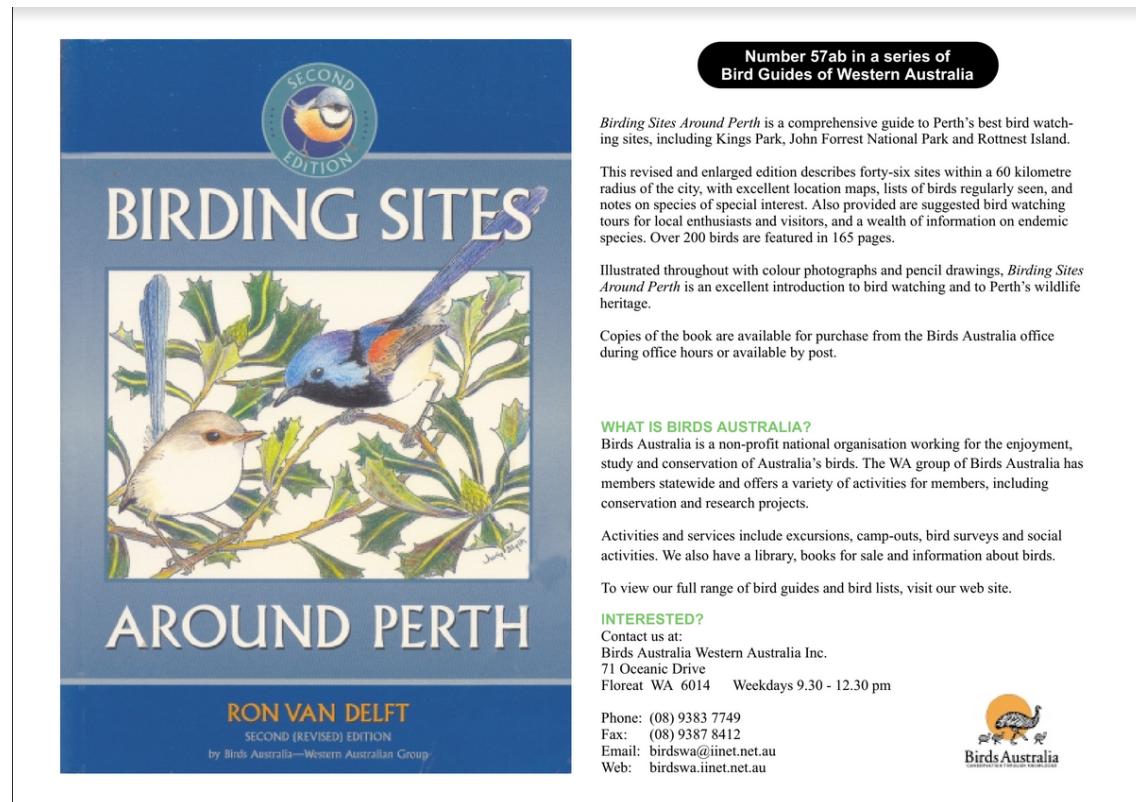


Figure 22: PDF recovered from Recycling Bin



UNIVERSITY of CALIFORNIA
**BOTANICAL
GARDEN**
NEWSLETTER

Volume 26, Number 2

Published by the UNIVERSITY OF CALIFORNIA BOTANICAL GARDEN at Berkeley, California

Spring 2001

Birds at the UCBG

"It's a hummingbird! But is it Anna's, Allen's or Rufous?"

Academic interest in the Garden's bird life over the last few years has primarily been associated with undergraduates studying the territorial behavior of hummingbirds. Any regular Garden visitor can tell you however, that you've never really experienced the Garden until you have taken the time to sit and just watch the birds, listen to their songs and enjoy the way in which they use the Garden! Encouraged by the vast plant variety and habitat diversity, there are around seventy-six bird species regularly sighted here over the course of an average year. The hope of spotting one of the more rarely sighted birds, such as the Western Kingbird or the White-throated Swift, keeps our endless parade of avid birdwatchers in thrall.

Our resident birds, however, whether it's an audacious jay, a noisy woodpecker or a colorful finch, provide plenty of ongoing interest for the Garden community.

The diverse collections of the Garden support an equally diverse population of birds, as is apparent in the list from the recent Christmas Bird Count. In addition to providing general shelter for both resident and migrant species, our collection provides food and nesting sites for many different taxa. The Garden environment offers a range of habitats that are rather different from the native chaparral of the canyon. Some visitors to the Japanese Pool, such as belted kingfishers and green and blue herons, might not otherwise stop in Strawberry Canyon. Native chaparral species are found in parts of the Garden that more closely approximate their preferred habitat. Wren tits, California thrashers, and



Aloes in the Southern African Area attract hummingbirds and demonstrate how birds at the Garden enjoy the diversity of plants in this collection.

spotted towhees are most commonly found in the scrubby areas of the South American and Australasian sections. Similarly, native riparian species are found in the trees along Strawberry Creek, such as Wilson's and orange crowned warblers.

Many birds have identified new food sources among the many non-native plants in our collections. This is particularly obvious when watching humming-

birds feed on both native salvias and penstemons, and also on bird-pollinated plants from other parts of the world. Aloes in the Southern African Area are pollinated by sun birds in their native habitat. These small colorful nectivores perch on the rigid blossom stalks of the aloes. This is a distinct contrast to the hovering feeding habit of the hummingbirds, which as a group are restricted to North and South America. Nonetheless, as a walk through this area at this time of the year demonstrates, hummingbirds utilize aloes extensively and assertively defend their feeding resources against other intruding hummers.

—Chris Carmichael

Figure 23: Front cover of a PDF recovered from Recycling Bin

The Porter County
Birding Guide



Figure 24: Front cover of a PDF recovered from Recycling Bin

F Websites

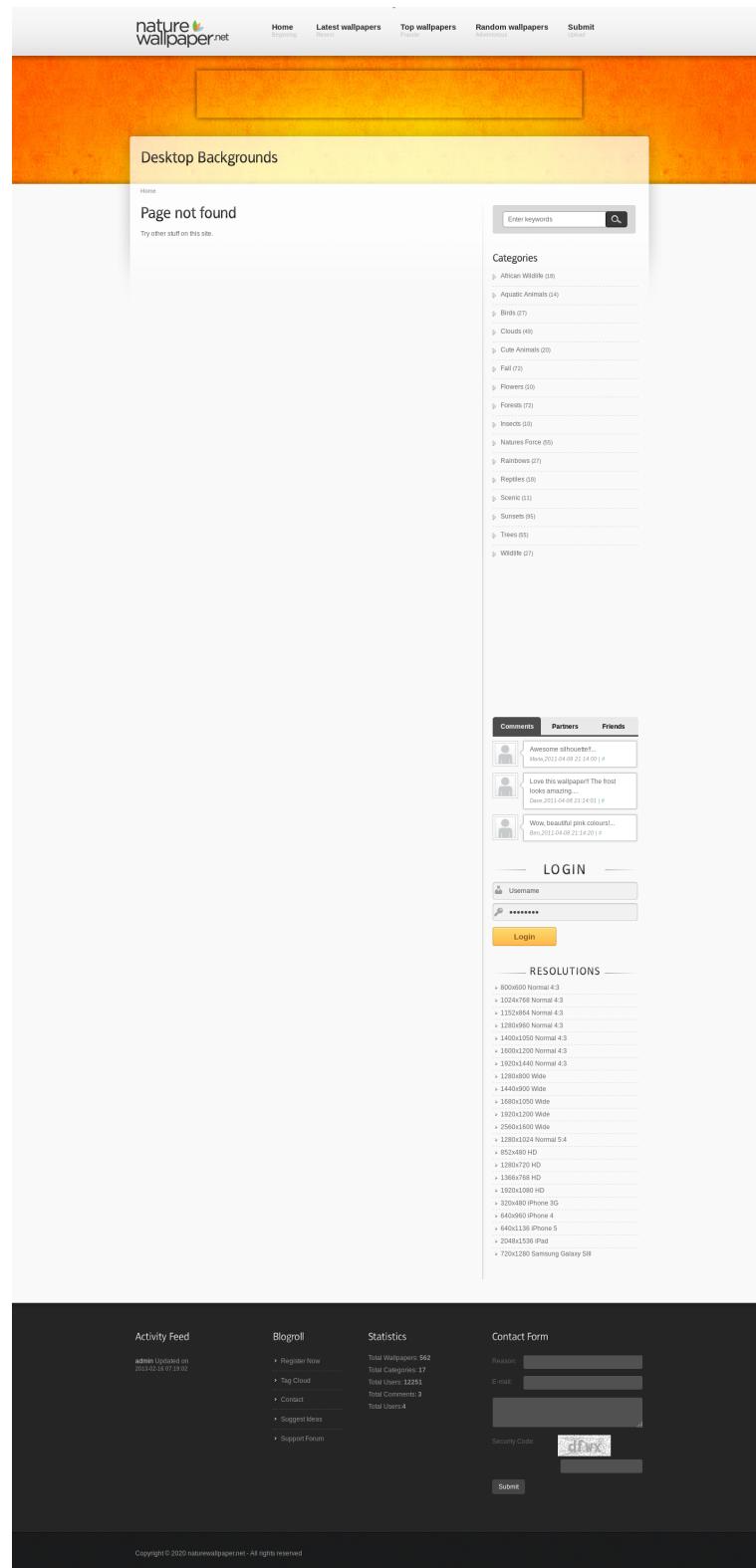


Figure 25: Free Bird Wallpapers



RELATED WHY FILES
[More bird mating](#)

POSTED 2 MAY 2002

[Evolution](#)

[Bird migration](#)

[Snail sex](#)

[Science of love](#)

[Sleepy birds learn better](#)

[The mating song of the black-capped chickadee helps females decide who isn't coming to National Park Service](#)

The best songs, it would seem, are about love. Whether it's a blues singer lamenting a lost love, or the sirens luring Odysseus to the shoals, a song is a great way to attract the opposite sex.

This is not news to songbirds, who started mixing crooning and wooing long before Frank Sinatra lamented that he "didn't stand a ghost of a chance with you."

Songbirds perform their vocal displays to mark territory and get noticed by eligible females. Many scientists think the message of the song tells her about his health -- since only a healthy guy bird could belt out the avian equivalent of "Lover Man."

Now we hear that female black-capped chickadees do more than listen closely. When their fellas lose out in a song competition, the ladies respond.

But not with a soothing, "Honey, maybe you can't hit high C-sharp, but you're still number-one. Come kiss my chicken lips."

No. The takeaway message for the ladies is: "I married a loser."

And then they step outside the nest for some quick action with another guy! In evolutionary terms, that would guarantee that at least some of her young get top-notch genes.



The day I lost my baby

This, in short, is the message of a new study by Daniel Mennill and colleagues at Queen's University, Kingston, Ontario. Mennill, a graduate student, is interested in how animals make decisions, and especially how birds communicate during mating. Instead of looking at two parties, however, he's checking the network thing -- how, say, a third party interprets communication between two others.

He calls it eavesdropping, since the females overhear the "conversations" of others.

Mennill studied wild-living black-capped chickadees at the Queen's University biological station and identified high- and low-status males. As with other-crust chickadees skin of the crowns, so to speak. "At a food source... everybody makes way for the highest ranking bird," he says.

Sing me softly of the blues

Male songs during mating season can be submissive or aggressive, Mennill says. **Aggressive songs** copy the pitch of the other guy's song.

In contrast, a **submissive song** uses a different pitch, giving the first songster some breathing room.

During mating season, Mennill hung out in the woods with a laptop and a speaker. He gathered the birds by playing the familiar **chickadee call**.

Bird Blues

When the guys began their mating songs, Mennill used software to identify the frequency, and then issued either an aggressive or a submissive song from his laptop. Weeks later, after the young were born, he took blood samples and used genetic techniques to determine each kid's biological dad.

The genetics told the sordid tale. Mennill says, "After a high-ranking guy lost a competition because I matched and overlapped his song, his female engaged in extrapair copulations." To Mennill, this proves that the females are eavesdropping on the guy-to-guy discussion.

Although songbirds were once considered monogamous -- they hang out in couples, and all of the young in the nest of a dominant male are normally his -- their behavior actually has elements of Beach Blanket Bingo. Many females do a certain amount of stepping out on their mates.

So when the lady heard her guy humiliated by the computerized song, she took her young wound up having a different dad. Mennill reports: "She's accustomed to hearing him win every song contest, but after hearing him lose, she changes her reproductive strategy."

It's a lot stranger in the night

Indeed, it took only six minutes a day, on two successive days, for the songs to change the female's mind, says Mennill. Apparently "the kind of information available through eavesdropping has a lot of importance relative to reproductive strategies."

The overlapping and matching songs may have other uses, says Mennill. Most animals, including chickadees, live in groups, where many males are singing at the same time. You have to have capacity to address one individual if you want to say "Hey you, I want you out of my territory."

Moral of the story: Guys, if you want to impress the ladies, tune up those vocal cords.

Karaoke, anyone?

-- David Tenenbaum

BIBLIOGRAPHY

Female Eavesdropping on Male song Contests in Songbirds, Daniel Mennill et al, *Science*, 3 May 2002.

[Credits](#) | [Feedback](#) | [Search](#)

©2002, University of Wisconsin, Board of Regents.

Figure 26: Chickadee Karaoke

File not found

Search Go

Birding / Wild Birds
Build a Bluebird Nest Box

Easy Box to Make

Building a bluebird nest box is a great way to get started making birdhouses. You do not need to invest any edges and the entire project can be completed in one 8 foot length of 1" x 6" lumber.

Since only simple materials and tools are required, this is a great project for a wonderful project for Scouts, youth groups, and beginning woodworking classes.

[Click here](#) for drawings of the pieces and dimensions you will need. (A) Click here for a closer up of the hole. [Click here](#) for a diagram of the pivot holes. [Click here](#) for a diagram of the front. See the box to the right for [good](#) and [bad](#) recommendations.

Materials needed:

Wood cut to the dimensions shown in A above
 1" x 6" lumber
 1 eye screw
 Wood screws

Directions:

1. Cut the wood to the dimensions shown in [diagram A](#). All the pieces can be cut from one 8' length of 1" x 6" lumber.
2. Cut the front entrance hole as in [diagram B](#). This is an oval shaped hole that is 1 3/8" wide and 2 1/4" long. To insure a good fit, cut the hole slightly larger than the front. Then drill one 1 3/8" circle at the top. Repeat at the bottom. Then drill a 1/4" hole in the center of the front.
3. Drill two small holes near the top of each side for ventilation.
4. Drill two small holes on the bottom for drainage.
5. Using finish nails or wood screws, secure one of the sides to the bottom. Then secure the front and back to the bottom.
6. Slip the 2nd side into place. Secure using two nails, one on each side. Make sure the nail holes are not so close together as to prevent the 2nd side will pivot outward.

See [diagram C](#) for...

7. Screw the eye screw near the bottom of the 2nd side. This will hold the nest box in place. If you do not have a mounting screw to monitor it as well as to open it at the end of the season.
8. Drill a hole through the front near the bottom into the 2nd side. Push a bird nail (if have a few by this point) into the hole. If you do not have a few by this point, use a small wood screw instead of the nail.
10. Nail or screw the roof to the nest box.
11. Attach the roof to the nest box, fence post, or tree. Be sure to use some type of predator guard to keep squirrels, snakes, raccoons, and other creatures from getting into the nest box. See [Specs](#) page for the correct mounting height.

May you always hear the whisper of wings...

Christine

FREE Newsletter

[Sign Up Now for the Birding / Wild Birds newsletter!](#)

Enter email address

Submit Query

[See Online Courses](#)

File not found

Firefox can't find the [root/Desktop/](#)

[/root/Desktop/](#) file(s)

• Check the file name

File not found

Firefox can't find the [root/Desktop/](#)

[/root/Desktop/](#) file(s)

• Check the file name

File not found

Firefox can't find the [root/Desktop/](#)

[/root/Desktop/](#) file(s)

• Check the file name

[Topic Index](#) | [\[1\]](#) | [\[2\]](#)

File not found

email to a friend email to a friend decrease font size increase font size font size

[About](#) [com](#) [Our Story](#) [Be a Guide](#) [Advertise and Info](#) [Imprint](#) [Actions](#) [Work](#) [About](#) [Site Map](#) [Icons](#) [Help](#)

[User Agreement](#) [Privacy Policy](#) [Kids Privacy Policy](#)

Best of About

[VIDEO: Create Your Own Craft Room](#) [VIDEO: Home Decorating Ideas](#) [VIDEO: Fashion Tips Photo Gallery](#) [New Hummer H2 Photo Gallery](#) [Las Vegas Strip](#)

Related Topics

[Exotic Pets](#)[WalkingU.S. / Canadian Parks](#)[Climbing](#)

Most Popular Video

[Bathroom Decoration Ideas](#) [Hot Date Day](#) [Carnival Games](#) [Fashion for Social Occasions](#) [Simple Crafts](#) [Summer Crafts](#)

[See other videos at About.com](#)

Most Popular Links

[Birdhouses](#)[Discount new & used items](#)[Affiliate Links](#)[About.com Home](#)[About.com Home](#)

[Your Own Wildlife Channel](#)[Bird Nesting Box with a built in TV Camera](#)[http://145.59.25.199/feathervision.co.uk](#)

[Bird & Parrot Breeding](#)[Birds, cages, nest boxes, vitamins, incubators, brooders, accessories](#)[www.parcsupplies.co.uk](#)

[Safeguard](#)[http://www.wirelessnestboxcamera.com](#)[Safeguard Images to PC or TV](#)[www.enjoybirdsmore.co.uk](#)

[Topic Index](#) | [\[1\]](#) | [\[2\]](#)

back to top

File not found

Firefox can't find the [root/Desktop/](#)

[/root/Desktop/](#) file(s)

• Check the file name

capitalization or typing errors.

• Check to see if the file was moved, renamed or deleted.

[Game Center](#)

[Zuma Deluxe](#)[Super Mah Jong](#)[Solitaire](#)[Crosswords](#)[Jigsaw Puzzles](#)[Flipwords](#)[Slot Words](#)

Figure 27: Building a bluebird nest

the spruce

Outdoors & Gardening

Birding and Wild Bird Care

Be a better birder with species profiles and tips on supplies, backyard birding, attracting birds, feeders, bird houses and conservation.

The Spruce uses cookies to provide you with a great user experience. By using The Spruce, you accept our use of cookies.

Spruce Up Your Inbox!

Learn tips for creating your most beautiful (and bountiful) garden ever.

Enter your email SIGN UP

Bird of Prey Experiences

Christmas offer on weekday bird of prey experiences. Lunch menu available.

skydoveofprey.co.uk **OPEN**

25 Best Birds to Watch for in Maine

12 Birds You Want In Your Yard for Pest Control, Pollination, and More

10 Easy DIY Bird Bath Projects

When Is Hummingbird Migration?

35 Best Birds to Watch for in California

What Do Bluebirds Eat?

20 Best Birds to Watch for in Minnesota

Fun Facts About Roadrunners

Do Ducks Have Teeth? Yes and No!

15 Best Birds to Watch for in Colorado

When to Stop Feeding Hummingbirds

How Do Wild Birds Keep Cool in Summer?

30 Best Birds to Watch for in Michigan

When to Put Out Birdhouses

What to Do When You Find a Baby Bird

Identifying the 12 Types of Ducks

[Birding: Getting Started >](#)

BIRDING BASICS

10 Easy DIY Bird Bath Projects

BIRDING BASICS

How Do Wild Birds Keep Cool in Summer?

BIRDING BASICS

How Do Birds Fly?

Fun Facts About Kingfishers

Will Copper Keep a Bird Bath Clean?

30 Best Birds to Watch for in Utah

Feed Orioles in Your Yard

Why Bread is Bad for Ducks

Types of Seabirds

25 Fun Facts About Hummingbirds

Birdhouse Hole Sizes

Here's What Hummingbirds Eat

What to Feed a Baby Bird

Hummingbird Behavior and

Colors That Attract Birds

74

FACILITIES

CHICKS



Young chicks can be maintained in a variety of suitable facilities. A small portable pen, 12 feet long, 4 feet wide and 2 foot high can be adequate for a number of chicks. The pen is placed on short cut grass and moved daily. Chicks are brought out to the pen after the temperature reaches above 60 F and the sun is shining. Birds can be maintained in this type of facility until the temperature drops or until weather is prohibitive. Include some type of shade and wind break as young birds are sensitive to extreme sun and wind.

Young birds should be brought indoors in the evening and maintained in a heated environment until at least 2 to 3 months of age. Temperature in indoor shelters should be maintained at least 65 F and enough room to allow the birds to exercise should be provided. In areas where weather is more severe, this period may need to be extended.

Do not provide feed at night but available water is acceptable. Feed the young birds as outlined in CARE OF YOUNG BIRDS section, prior to turning them out in the morning.

JUVENILES



Juvenile birds between 3 and 10 months of age can be maintained in a similar, but larger facility as young birds. For convenience, access to the indoor facility should be available directly from the outdoor pens. However, shelter is not needed except in extremely cold areas. The amount of space per bird, for both indoor and outdoor facilities should be increased for this age bird as compared to that available for younger chicks. Outdoor pens can be of any type of substrate but ground cover such as grass, clover, or alfalfa is ideal. Grass should be kept at a closely mowed level, especially when grass begins to dry out or turn to seed, as impactions are more common at this time. Daily mowing may be necessary during some periods of the year.

ADULTS



Pens and facilities for adults vary considerably. Most ranchers maintain adult pairs or trios in facilities that range from five thousand square feet to an acre or more. In general, the more room that can be provided, the better the situation. Common fences and line of sight access to neighboring pairs is often desirable but may not be practicable with overly aggressive males.

Housing or shade is usually provided although not always utilized. If birds are accustomed to being fed and watered in a shed they will be more easily confined when necessary and may build the nest and lay indoors. Alley-ways for movement of birds from pen to pen, access for hailing, and provisions for confinement for veterinary care should be considered at the time of construction. Although surprising, most ratites do not require indoor shelter once over 6 months of age and often refuse to use such structures, independent of weather.



Fencing is dependent on personal preference and economics. Chain link is good but may result in problems related to leg and foot injuries and is not easily climbed if escape from the pen by egg gatherers is necessary. Tubular "cattle" type fence is suitable and offer some benefits and others types of woven wire fencing are routinely used.

Many ranchers are now utilizing group pens consisting of several males and numerous females in larger acreage. This appears to provide some benefits and is more nearly similar to a natural situation. Early results indicate that increased fertility, more egg numbers, and extended laying periods can be expected in this type of set up. Several acres of enclosed pasture are needed for this type of operation.

Difficulties with a group breeding situation include the inability to determine exactly the resultant chicks parentage.

[Ostrich Book](#)

Figure 29: Caring for baby ostriches

G Emails

```
From - Wed Feb 09 11:08:07 2005
X-Account-Key: account2
X-UIDL: qX30ACU0gTetW1E2tSGw
X-Mozilla-Status: 0001
X-Mozilla-Status2: 10000000
Message-Id: <ftPrWYA1H5hLVFeYa7N3@fakepop.invalid>
Date: Wed, 09 Feb 2005 11:08:01 +0000
X-UIDL: qX30ACU0gTetW1E2tSGw
X-fakepop-version: 7
X-fakepop-build: Dec 4 2004 17:08:02
X-fakepop-uri: http://vztech.com.br/software/fakepop/
X-Message-Flag: message delivered by fakepop - http://vztech.com.br/software/fakepop/
Envelope-to: jdoe@example.com
Delivery-date: Wed, 17 Nov 2004 19:51:39 +0100
Received: from example.org ([192.168.231.26] helo@example.org)
        by mail.example.com with esmtp (Exim 4.34) id 1CIWEs-0005v3-7o
        for jdoe@example.com; Tue, 8 Feb 2005 14:13:26 +0100
        Received: (qmail 23682 invoked from network); 08 Feb 2005 14:13:24 -0000
From: Ben Forbes <ben@example.org>
To: jdoe@example.com
Subject: good pics
Date: Tue, 8 Feb 2005 14:13:26 +0000
User-Agent: KMail/1.7.2
MIME-Version: 1.0
Content-Type: Multipart/Mixed;
    boundary="Boundary-00=_GkMCCEL2vkLPD1G"
Status: 0
X-UID: 11909
Content-Length: 155618
X-Keywords:
X-Length: 158992

--Boundary-00=_GkMCCEL2vkLPD1G
Content-Type: text/plain;
    charset="utf-8"
Content-Transfer-Encoding: 7bit
Content-Disposition: inline

Hi thought you'd like these

enjoy

--Boundary-00=_GkMCCEL2vkLPD1G
Content-Type: image/jpeg;
    name="7EYBTELF1KAN.jpg"
Content-Transfer-Encoding: base64
Content-Disposition: attachment;
    filename="7EYBTELF1KAN.jpg"

--Boundary-00=_GkMCCEL2vkLPD1G
Content-Type: image/jpeg;
    name="IMG_3937_filtered.jpg"
Content-Transfer-Encoding: base64
Content-Disposition: attachment;
    filename="IMG_3937_filtered.jpg"

--Boundary-00=_GkMCCEL2vkLPD1G
Content-Type: image/jpeg;
    name="cute_penguin.jpg"
Content-Transfer-Encoding: base64
Content-Disposition: attachment;
    filename="cute_penguin.jpg"
|
```

Figure 30: First Email from Ben Forbes

From - Wed Feb 09 11:08:08 2005
 X-Account-Key: account2
 X-UIDL: ZrAWXdiyn9fDpdDxkzA1
 X-Mozilla-Status: 0001
 X-Mozilla-Status2: 10000000
 Message-Id: <OD1VOUT6OGifJL8TS8ls@fakepop.invalid>
 Date: Wed, 09 Feb 2005 11:08:01 +0000
 X-UIDL: ZrAWXdiyn9fDpdDxkzA1
 X-fakepop-version: 7
 X-fakepop-build: Dec 4 2004 17:08:02
 X-fakepop-url: http://vztech.com.br/software/fakepop/
 X-Message-Flag: message delivered by fakepop - http://vztech.com.br/software/fakepop/
 Envelope-to: jdoe@example.com
 Delivery-date: Tue, 8 Feb 2005 14:35:29 +0000
 Received: from example.org ([192.168.231.26] helo@example.org)
 by mail.example.com with esmtp (Exim 4.34)
 id 1CIWEs-0005v3-70
 for jdoe@example.com; Tue, 8 Feb 2005 14:35:27 +0000
 Received: (qmail 23682 invoked from network); 8 Feb 2005 14:35:27 +0000
 Date: Tue, 8 Feb 2005 14:35:27 +0000
 From: Ben Forbes <ben@example.org>
 To: jdoe@example.com
 Subject: some more good ones
 User-Agent: KMail/1.7.2
 MIME-Version: 1.0
 Content-Type: Multipart/Mixed;
 boundary="Boundary-00=_v4MCC9SXbEkeHP9"
 Status: 0
 X-UID: 11910
 Content-Length: 534627
 X-Keywords:
 X-Length: 542945

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: text/plain;
 charset="utf-8"
 Content-Transfer-Encoding: 7bit
 Content-Disposition: inline

Thanks for the pics you sent me here are some I really like

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: image/jpeg;
 name="BC7 feeding the birds.jpg"
 Content-Transfer-Encoding: base64
 Content-Disposition: attachment;
 filename="BC7 feeding the birds.jpg"

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: image/jpeg;
 name="glfs-storm-birds.jpg"
 Content-Transfer-Encoding: base64
 Content-Disposition: attachment;
 filename="glfs-storm-birds.jpg"

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: image/jpeg;
 name="colorful-birds.jpg"
 Content-Transfer-Encoding: base64
 Content-Disposition: attachment;
 filename="colorful-birds.jpg"

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: image/jpeg;
 name="IMG_3937_filtered.jpg"
 Content-Transfer-Encoding: base64
 Content-Disposition: attachment;
 filename="IMG_3937_filtered.jpg"

--Boundary-00=_v4MCC9SXbEkeHP9
 Content-Type: image/jpeg;
 name="gawall8.jpg"

Figure 31: Second Email from Ben Forbes

```

From - Wed Feb 09 11:08:08 2005
X-Account-Key: account2
X-UIDL: mI9vNXPVmE7pslelfhS
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Message-Id: <FcJJpiktBLDDt7Qctr1@fakepop.invalid>
Date: Wed, 09 Feb 2005 11:08:01 +0000
X-UIDL: mI9vNXPVmE7pslelfhS
X-fakepop-version: 7
X-fakepop-build: Dec 4 2004 17:08:02
X-fakepop-url: http://vztech.com.br/software/fakepop/
X-Message-Flag: message delivered by fakepop - http://vztech.com.br/software/fakepop/
Envelope-to: jdoe@example.com
Delivery-date: Wed, 17 Nov 2004 19:51:39 +0100
Received: from example.org ([192.168.231.26] helo@example.org)
        by mail.example.com with esmtp (Exim 4.34)
        id 1CIWEs-0005v3-7o
        for jdoe@example.com; Fri, 15 Oct 2004 18:51:39 +0100
Received: (qmail 23682 invoked from network); 15 Oct 2004 07:08:32 -0000
Date: Wed, 17 Nov 2004 19:20:15 +0200
From: Ben Forbes <ben@example.org>
To: jdoe@example.com
Subject: expensive birds

```

A young woman was walking past a pet shop and saw an exotic, white cockatoo for sale. The price was \$6000. She entered the store and asked the clerk why the bird was so expensive. The clerk told her that the bird spoke 6 different languages. "Does it speak English?" asked the woman. "Of course it does!" said the clerk. The woman thought about her mother who was multi-lingual, a bit of a recluse and lived all alone. She decided to purchase the bird and send it to her mother as a companion. She paid for the bird and made arrangements for it to be delivered. The following day, the woman telephoned her mother. "Mama, did you like the cockatoo that I sent you?" "Oh it was delicious!" she replied. "Mama, what do you mean delicious?" "I made soup out of it." "But mama, that bird spoke six different languages!" "Oh dear! Why didn't it say something?"

Figure 32: Third Email from Ben Forbes

```

From - Wed Feb 09 11:08:07 2005
X-Account-Key: account2
X-UIDL: vmyLTMZm6jBNjghPvFqQ
X-Mozilla-Status: 0001
X-Mozilla-Status2: 00000000
Message-Id: <Wnifx1wJ4fcUPH80kr3g@fakepop.invalid>
Date: Wed, 09 Feb 2005 11:08:01 +0000
X-UIDL: vmyLTMZm6jBNjghPvFqQ
X-fakepop-version: 7
X-fakepop-build: Dec 4 2004 17:08:02
X-fakepop-url: http://vztech.com.br/software/fakepop/
X-Message-Flag: message delivered by fakepop - http://vztech.com.br/software/fakepop/
Envelope-to: jdoe@example.com
Delivery-date: Sat, 16 Oct 2004 18:51:39 +0100
Received: from outgoing.birds.com ([192.168.231.26] helo=outgoing2.birds.example.com)
        by mail.example.com with esmtp (Exim 4.34)
        id 1CIWEs-0005v3-7o
        for jdoe@example.com; Sat, 16 Oct 2004 18:51:39 +0100
Received: (qmail 23682 invoked from network); 16 Oct 2004 07:08:32 -0000
Date: Sat, 16 Oct 2004 15:20:15 +0200
From: Bird Fanciers <mailinglist@birds.example.com>
To: jdoe@example.com
Subject: How to Identify Birds

How to Identify Birds

Are you amazed at how quickly birders can identify birds? Actually, it's just like getting to know your human neighbors. When you move into a new neighborhood everyone is a stranger, but soon you learn to tell people apart as you unconsciously catalog their characteristics. Their habits, shape, styles of walking, and "habitats" become familiar enough that you can recognize each neighbor immediately, even at a distance.

Paying attention to individual differences can help you identify birds, too. You can recognize many birds simply by noting their shapes, even if seen only in silhouette. Other useful characteristics are a bird's posture, size (easiest to judge if you use familiar birds as a size reference), flight pattern and/or head-on flight profile, and the kind of habitat in which the bird was seen.

Start by learning to identify general groups of birds- warblers, flycatchers, hawks, owls, wrens- whose members all share certain similarities. As your observation skills improve, familiarize yourself with the field marks- colored or patterned areas on the bird's body, head, and wings- that help distinguish species.

```

Figure 33: Email from mailinglist@birds.example.com

H Recycling Bin

```
izzy@debra:/mnt/john2/RECYCLER/S-1-5-21-725345543-854245398-1202660629-1003$ strings INFO2
F:\blue_bird2.jpg
Pc '
```

Figure 34: Strings command run on recycled contents from the hidden partition

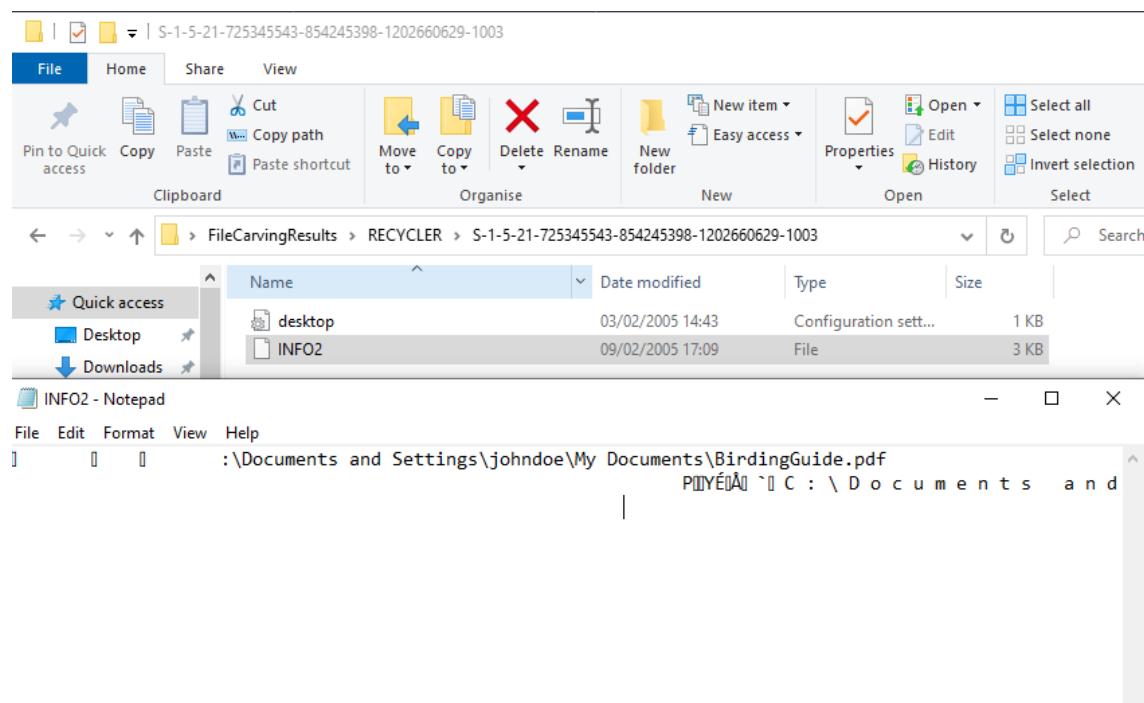


Figure 35: John Doe's Recycling Bin

```
:\\Documents and Settings\\johndoe\\My Documents\\BirdingGuide.pdf
$IXÉA € C:\\Documents and Settings\\johndoe\\My Documents\\BirdingGuide.pdf
:\\Documents and Settings\\johndoe\\My Documents\\news_spring2001.pdf
PYÉA `C:\\Documents and Settings\\johndoe\\My Documents\\news_spring2001.pdf
:\\Documents and Settings\\johndoe\\My Documents\\57ab_perth.pdf
°/YÉA @ C:\\Documents and Settings\\johndoe\\My Documents\\57ab_perth.pdf
```

Figure 36: Recycling Bin - Text Dump of contents of John Doe's Recycling Bin

I Registry Analysis

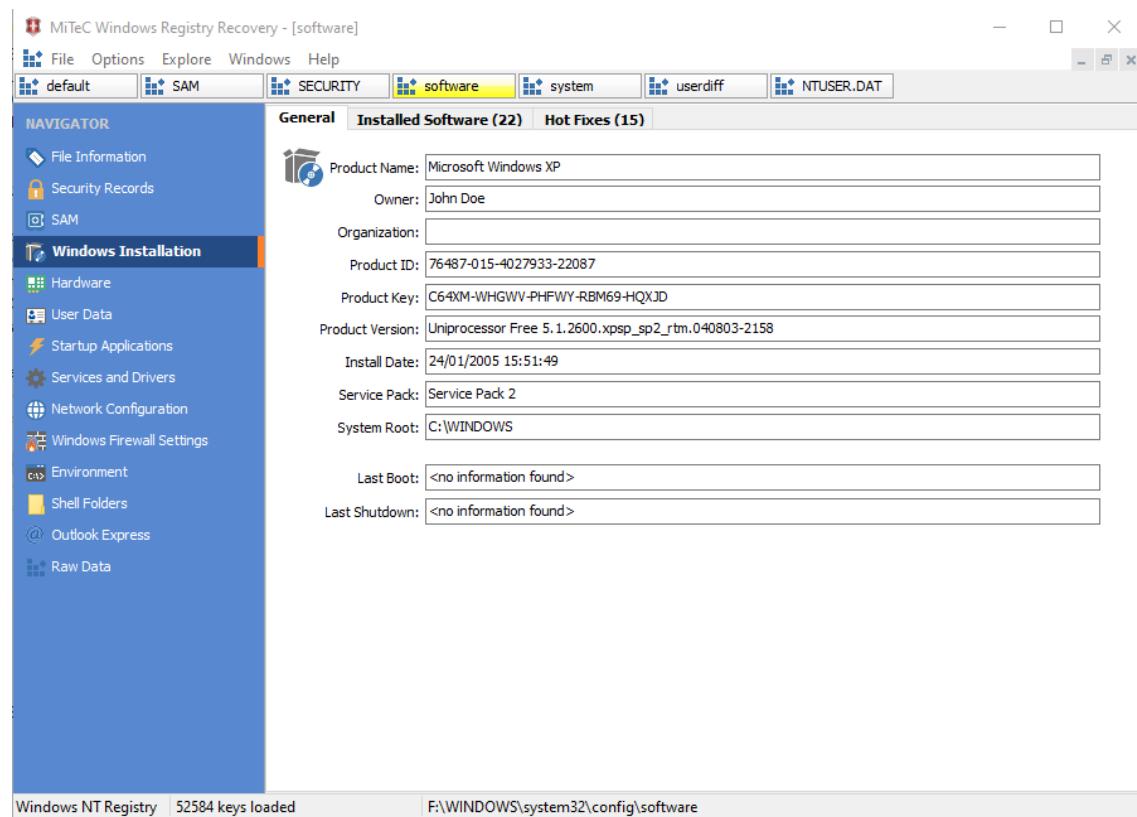


Figure 37: Machine Information about John Doe's machine

Name	Version	Company	Datetime	Uninstall
Adobe Reader 7.0	7.0.0	Adobe System...	20050202	MsExec.exe /I{AC76BA86-7AD7-1033-7B44-A70000000000}
McAfee VirusScan Enterprise	8.0.0	Network Associa...	20050124	MsExec.exe /I{50FD31B8-894E-4CCD-8275-159AC9829B43}
Microsoft Office Professional Ed...	11.0.6361.0	Microsoft Corp...	20050125	MsExec.exe /I{90110409-6000-11D3-8CFE-0150048383C9}
Mozilla Firefox (1.0)	1.0 (en-GB)	Mozilla		C:\WINDOWS\UninstallFirefox.exe /u "1.0 (en-GB)"
Mozilla Thunderbird (1.0)	1.0 (en)	Mozilla		C:\WINDOWS\UninstallThunderbird.exe /u "1.0 (en)"
RealPlayer				C:\Program Files\Common Files\Real\Update_08\ipuninst.exe RealPlayer 6.0
WebFids XP	9.50.7523	Microsoft Corp...	20050124	C:\Program Files\Windows Privacy Tools\Uninst.exe
Windows Privacy Tools	1.0r2	Windows Priva...		C:\WINDOWS\\$ntuninstallKB834707\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB834707	20040929...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB867282\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB867282	20050127...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB873333\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB873333	20050114...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB873339\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB873339	20041117...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB885290\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB885290	20050118...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB885835\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB885835	20041027...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB885836\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB885836	20041028...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB886185\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB886185	20041021...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB887472\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB887472	20041014...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB888113\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB888113	20041116...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB888302\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB888302	20041207...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB890047\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB890047	20041221...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB890175\\$ipuninst\ipuninst.exe
Windows XP Hotfix - KB890175	20041201...	Microsoft Corp...		C:\WINDOWS\\$ntuninstallKB89178\\$ipuninst\ipuninst.exe
	20050110...	Microsoft Corp...		

Figure 38: Software installed on John Doe's machine

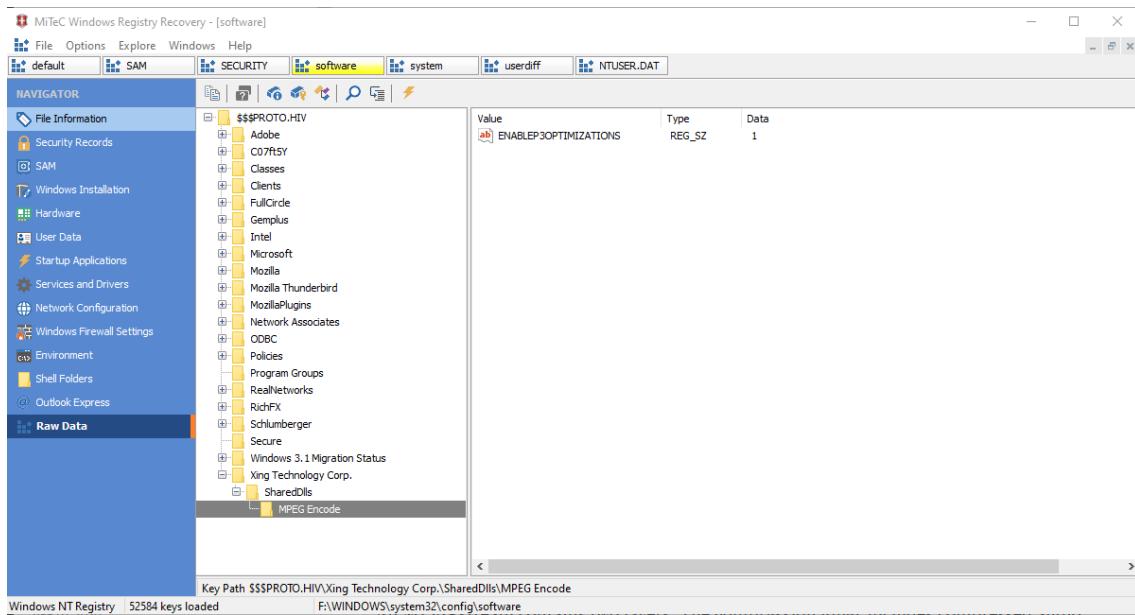


Figure 39: Software installed to create encrypted GPG files.

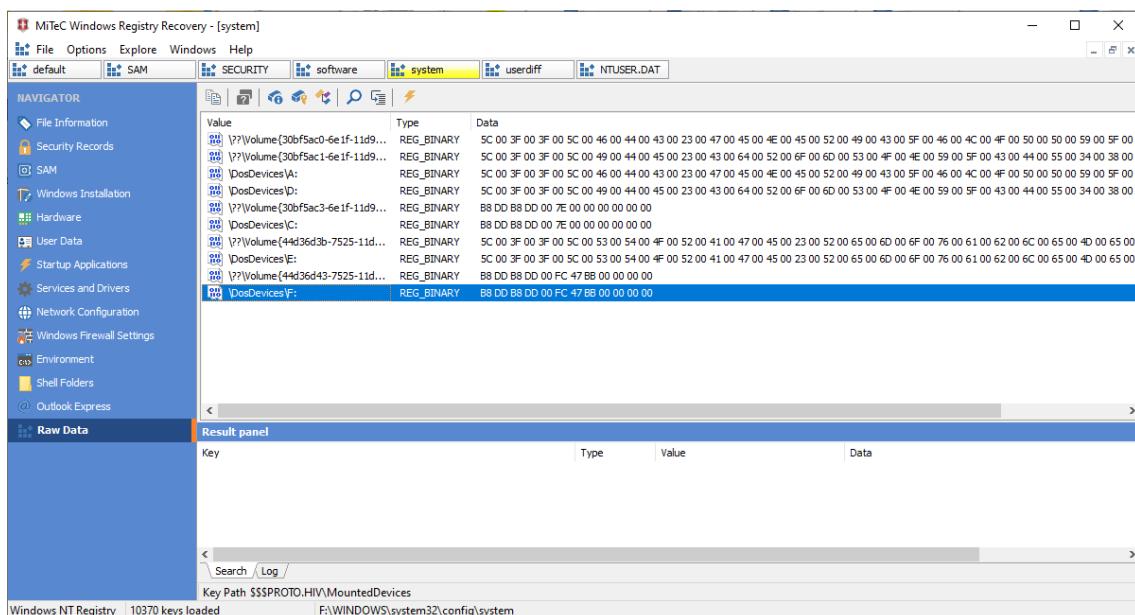


Figure 40: Devices connected to John Doe's machine

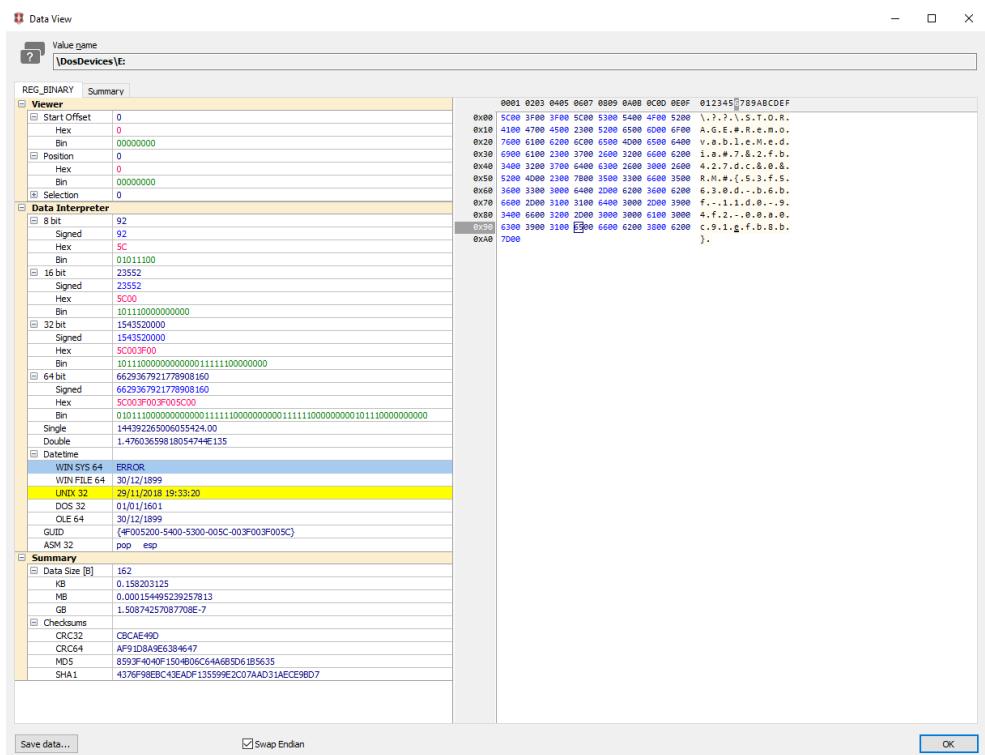


Figure 41: Removable Device identified from registry information

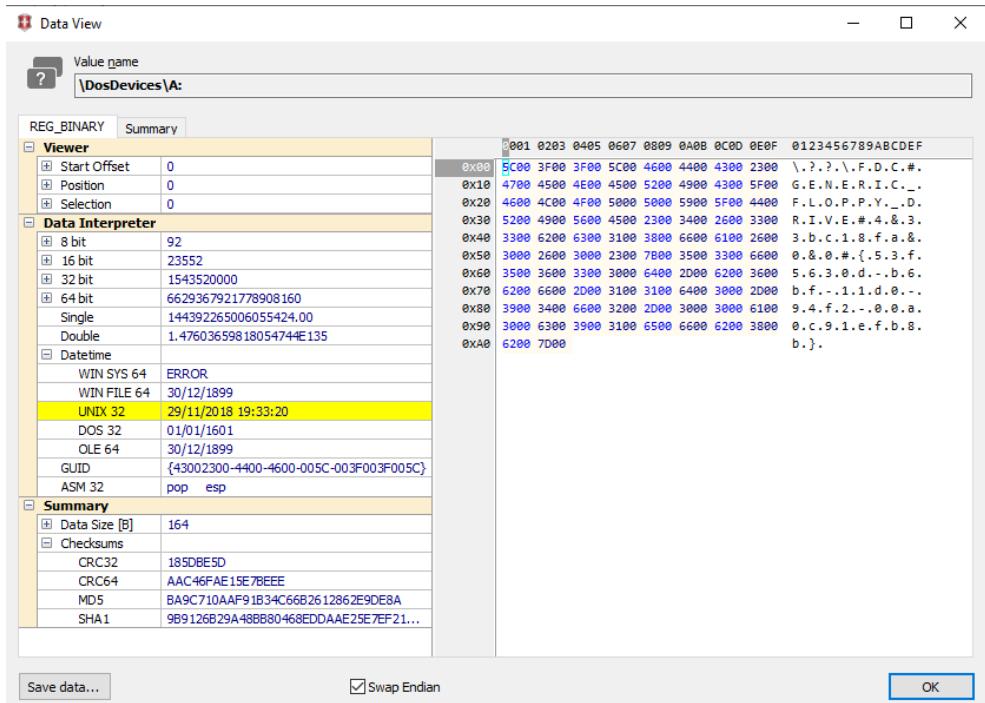


Figure 42: Floppy Disk Drive identified from registry information

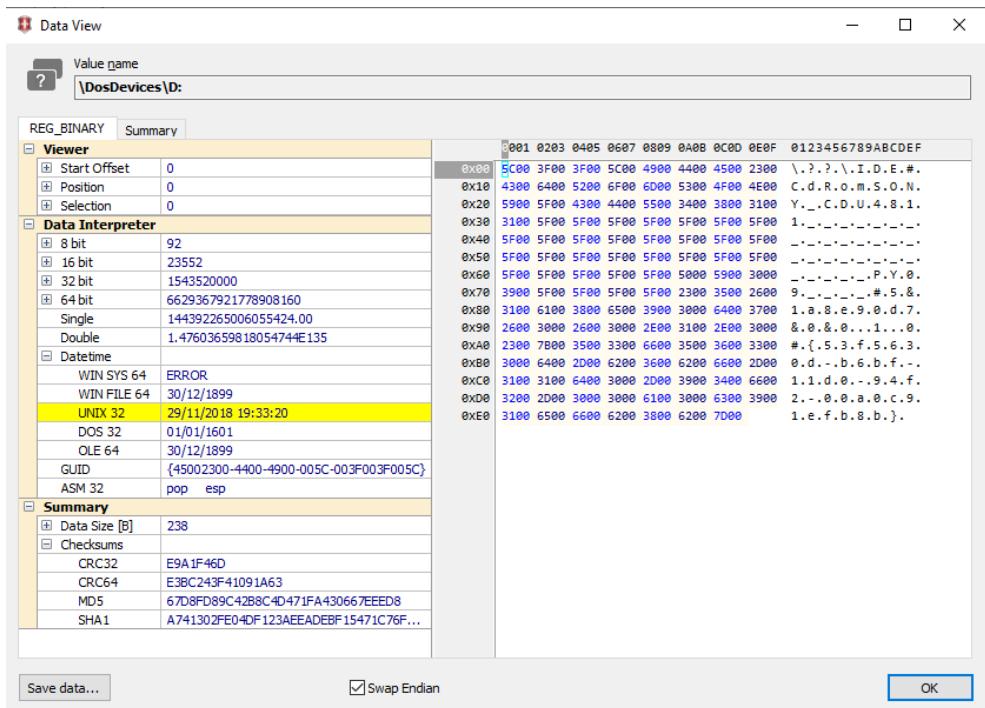


Figure 43: CD Rom Drive identified from registry information

J Autopsy

Operating System User Account							
User Name	User ID	Account Settings	Account Type	Count	Date Accessed	Date Created	
Administrator	S-1-5-21-725345543-854245398-1202660629-500		Default Admin User	0		2005-01-24 16:10:13 GMT	
Guest	S-1-5-21-725345543-854245398-1202660629-501	Account Disabled	Default Guest Acct	0		2005-01-24 16:10:13 GMT	
HelpAssistant	S-1-5-21-725345543-854245398-1202660629-1000	Account Disabled	Custom Limited Acct	0		2005-01-24 15:37:21 GMT	
LocalService	S-1-5-19						
NetworkService	S-1-5-20						
SUPPORT_388945a0	S-1-5-21-725345543-854245398-1202660629-1002	Account Disabled	Custom Limited Acct	0		2005-01-24 15:42:04 GMT	
bob	S-1-5-21-725345543-854245398-1202660629-1005		Custom Limited Acct	1	2005-02-03 10:12:34 GMT	2005-02-02 15:08:39 GMT	
jane	S-1-5-21-725345543-854245398-1202660629-1004		Custom Limited Acct	1	2005-02-03 11:23:04 GMT	2005-02-02 12:36:29 GMT	
johndoe	S-1-5-21-725345543-854245398-1202660629-1003		Default Admin User	21	2005-02-09 16:49:18 GMT	2005-01-24 15:56:49 GMT	
systemprofile	S-1-5-18						

Figure 44: User Accounts found from Autopsy

EXIF Metadata							
Date Taken	Device Manufacturer	Device Model	Latitude	Longitude	Altitude	Source File	
2002-12-30 12:28:49 GMT	SONY	CYBERSHOT				/img_johnDoe.dd\vol_0\2\Documents and Settings\johndoe\Application Data\Thunderbird\Profiles\8jqr7bv\c	
2003-01-29 16:14:10 GMT	Canon	Canon EOS-1DS				/img_johnDoe.dd\vol_0\3\BellbirdJumpingOffBranch.jpg	
2004-06-17 18:42:34 BST	Canon	Canon PowerShot SD100				/img_johnDoe.dd\vol_0\2\Documents and Settings\johndoe\Desktop\birdtrans2.jpg	
2004-06-20 18:01:44 BST	Canon	Canon PowerShot SD100				/img_johnDoe.dd\vol_0\2\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg	
2004-06-22 21:10:50 BST	Canon	Canon PowerShot SD100				/img_johnDoe.dd\vol_0\2\Documents and Settings\johndoe\My Documents\newbies2.jpg	
2004-06-27 18:28:34 BST	Canon	Canon PowerShot SD100				/img_johnDoe.dd\vol_0\2\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg	

Figure 45: List of camera devices and the associated images

K Downloaded Files

```

<RDF:Description RDF:about="C:\DOCUMENTS\JOHNDOE\LOCALS\TEMP\dawn.ram"
  NC:Name="dawn.ram"
  NC:Transferred="1kB of 1kB"
  <NC:URL RDF:resource="http://www.pbs.org/lifeofbirds/songs/dawn.ram"/>
  <NC:File RDF:resource="C:\DOCUMENTS\JOHNDOE\LOCALS\TEMP\dawn.ram"/>
  <NC:DateStarted NC:parseType="Date">Wed Feb 02 15:12:09 GMT Standard Time 2005 +573635</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Wed Feb 02 15:12:09 GMT Standard Time 2005 +593664</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 46: Download data on Dawn.ram

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\Desktop\AdbeRdr70_enu_full.exe"
  NC:Name="AdbeRdr70_enu_full.exe"
  NC:Transferred="20311kB of 20311kB"
  <NC:URL RDF:resource="http://ardownload.adobe.com/pub/adobe/reader/win/7x/7.0/enu/AdbeRdr70_enu_full.exe"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\Desktop\AdbeRdr70_enu_full.exe"/>
  <NC:DateStarted NC:parseType="Date">Wed Feb 02 16:53:20 GMT Standard Time 2005 +553275</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Wed Feb 02 16:54:42 GMT Standard Time 2005 +150606</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 47: Download data on AdbeRdr_enu_full.exe

```

<RDF:Description RDF:about="E:\birds\audio\aggressive_song.wav"
  NC:Name="aggressive_song.wav"
  NC:Transferred="716kB of 716kB"
  <NC:URL RDF:resource="http://whyfiles.org/shorties/104chick_sex/images/aggressive_song.wav"/>
  <NC:File RDF:resource="E:\birds\audio\aggressive_song.wav"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 12:22:52 GMT Standard Time 2005 +164782</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 12:23:00 GMT Standard Time 2005 +466720</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 48: Download data on aggressive_song.wav

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_vyoung.jpg"
  NC:Name="babyscot_vyoung.jpg"
  NC:Transferred="38kB of 38kB"
  <NC:URL RDF:resource="http://freespace.virgin.net/cobber.budgies/images/babyscot_vyoung.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_vyoung.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:00:19 GMT Standard Time 2005 +779785</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:00:19 GMT Standard Time 2005 +819843</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 49: Download data on babyscot_vyoung.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_2weeks1.jpg"
  NC:Name="babyscot_2weeks1.jpg"
  NC:Transferred="33kB of 33kB"
  <NC:URL RDF:resource="http://freespace.virgin.net/cobber.budgies/images/babyscot_2weeks1.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\babyscot_2weeks1.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:00:27 GMT Standard Time 2005 +761262</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:00:27 GMT Standard Time 2005 +811334</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 50: Download data on babyscot_2weeks1.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\177.jpg"
  NC:Name="177.jpg"
  ++++++
  NC:Transferred="9kB of  9kB">
  <NC:URL RDF:resource="http://www.insaneanimals.com/items/177.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\177.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:01:38 GMT Standard Time 2005 +983675</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:01:39 GMT Standard Time 2005 +033747</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 51: Download data on 177.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\ostbk2b2.htm"
  NC:Name="ostbk2b2.htm"
  NC:Transferred="4kB of  4kB">
  <NC:URL RDF:resource="http://www.cvm.okstate.edu/instruction/kocan/ostrich/ostbk2b2.htm"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\ostbk2b2.htm"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:02:45 GMT Standard Time 2005 +499320</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:02:45 GMT Standard Time 2005 +579435</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 52: Download data on ostbk2b2.htm

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\Desktop\birdtrans2.jpg"
  NC:Name="birdtrans2.jpg"
  NC:Transferred="58kB of 58kB">
  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/birdtrans2.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\Desktop\birdtrans2.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:04:48 GMT Standard Time 2005 +235806</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:04:48 GMT Standard Time 2005 +285878</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 53: Download data on birdtrans2.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg"
  NC:Name="chicks2.jpg"
  ++++++
  NC:Transferred="38kB of 38kB">
  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/chicks2.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\My Pictures\chicks2.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:05:03 GMT Standard Time 2005 +690040</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:05:03 GMT Standard Time 2005 +748112</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 54: Download data on chicks2.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\newbies2.jpg"
  NC:Name="newbies2.jpg"
  NC:Transferred="54kB of 54kB">
  <NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/newbies2.jpg"/>
  <NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\newbies2.jpg"/>
  <NC:DateStarted NC:parseType="Date">Thu Feb 03 15:05:44 GMT Standard Time 2005 +376532</NC:DateStarted>
  <NC:DateEnded NC:parseType="Date">Thu Feb 03 15:05:44 GMT Standard Time 2005 +456648</NC:DateEnded>
  <NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
  <NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 55: Download data on newbies2.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"
+=====
NC:Name="ready2fledge.jpg"
+=====
NC:Transferred="77kB of 77kB">
<NC:URL RDF:resource="http://people.cornell.edu/pages/sah67/ready2fledge.jpg"/>
<NC:File RDF:resource="C:\Documents and Settings\bob\My Documents\My Music\ready2fledge.jpg"/>
<NC:DateStarted NC:parseType="Date">Thu Feb 03 15:06:42 GMT Standard Time 2005 +379937</NC:DateStarted>
<NC:DateEnded NC:parseType="Date">Thu Feb 03 15:06:42 GMT Standard Time 2005 +440024</NC:DateEnded>
<NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
<NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 56: Download data on ready2fledge.jpg

```

<RDF:Description RDF:about="C:\Documents and Settings\johndoe\My Documents\birds.zip"
+=====
NC:Name="birds.zip"
+=====
NC:Transferred="1028kB of 1028kB">
<NC:URL RDF:resource="http://www.traveltex.com/downloads/screensavers/birds.zip"/>
<NC:File RDF:resource="C:\Documents and Settings\johndoe\My Documents\birds.zip"/>
<NC:DateStarted NC:parseType="Date">Wed Feb 09 11:28:00 GMT Standard Time 2005 +345172</NC:DateStarted>
<NC:DateEnded NC:parseType="Date">Wed Feb 09 11:28:00 GMT Standard Time 2005 +415273</NC:DateEnded>
<NC:DownloadState NC:parseType="Integer">1</NC:DownloadState>
<NC:ProgressPercent NC:parseType="Integer">100</NC:ProgressPercent>
</RDF:Description>

```

Figure 57: Download data on birds.zip

L Bookmarks

Bookmarks

Bookmarks Toolbar Folder

Add bookmarks to this folder to see them displayed on the Bookmarks Toolbar

Getting Started
Latest Headlines

Quick Searches

Handy searches that can be performed in the addressbar

Google Quicksearch
Type "google <search terms>" in the location bar to perform a Google search
Dictionary.com Quicksearch
Type "dict <word>" in the location bar to perform a dictionary look-up
Stock Symbol Quicksearch
Type "quote <symbol>" in the location bar to perform a stock symbol look-up
Wikipedia Quicksearch
Type "wp <something>" in the location bar to look up something in Wikipedia, a free online encyclopedia.
Urban Dictionary
Type "slang <word>" in the location bar to look up something in the people's slang dictionary

Firefox and Mozilla Links

Firefox Start Page
Firefox Central
Themes and Extensions
Firefox Product Page
The Mozilla web site
MozillaZine
Mozilla Store
Get Involved - Help spread Firefox!

Free Bird Wallpaper - Bald Eagle Albatross Owl Falcon 1024x768
Alphabetical Index of Birds
Chickadee Karaoke

Figure 58: File containing Doe's bookmarked pages

M Browsing History

```
(87=google.co.uk) (88
  =http://www.google.co.uk/firefox?client=firefox-a&rls=org.mozilla:en-GB:of\
ficial) (89=M$00o$00z$00i$001$001$00a$00 $00F$00i$00r$00e$00f$00o$00x$00 $00S$00\
t$00a$00r$00t$00 $00P$00a$00g$00e$00) (8A=http://www.mozilla.org/about/)
  (8B=1106584117114958) (8C=mozilla.org) (8D=A$00b$00o$00u$00t$00 $00M$00o$00z$00\
i$001$001$00a$00) (8E=http://www.mozilla.org/products/) (8F=1106584120960488)
  (90=M$00o$00z$00i$001$001$00a$00 $00P$00r$00o$00d$00u$00c$00t$00s$00)
  (91=http://www.mozilla.org/products/thunderbird/) (92
    =T$00h$00u$00n$00d$00e$00r$00b$00i$00r$00d$00 $00-$00 $00R$00e$00c$001$00a\
$00i$00m$00 $00Y$00o$00u$00r$00 $00I$00n$00b$00o$00x$00) (93
    =http://download.mozilla.org/?product=thunderbird&os=win&lang=en-US)
  (94=1106584127049243) (95=download.mozilla.org) (96
    =ftp://ftp.scarlet.be/pub.mozilla.org/thunderbird/releases/1.0/win32/en-US\
/Thunderbird%20Setup%201.0.exe) (97=ftp.scarlet.be) (98
```

Figure 59: Section of Doe’s browsing history in which he obtains Mozilla Thunderbird.

```
n$001$00o$00a$00d$00 $00C$00a$00t$00a$001$00o$00g$00) (A8
  =http://www.google.co.uk/search?client=firefox-a&rls=org.mozilla%3Aen-GB%3\
Aofficial_schl=en&q=birds&meta=&btnG=Google+Search) (AC=1107353506584032)
  (AD=G$00o$00o$00g$001$00e$00 $00S$00e$00a$00r$00c$00h$00:$00 $00b$00i$00r$00\
d$00s$00) (AE=http://www.pbs.org/lifeofbirds/) (18A=1107357090607605)
  (AF=1107353514996128) (B0=pbs.org) (B1=T$00h$00e$00 $00L$00i$00f$00e$00 $00o$00\
f$00 $00B$00i$00r$00d$00s$00) (B2
    =http://www.pbs.org/lifeofbirds/songs/index.html) (18B=1107357094653422)
  (B3=1107353525280917) (B4
```

Figure 60: Section of Doe’s browsing history in which he makes a google search for ‘birds’ and visits ‘www.pbs.org’.

```
$00 $00S$00o$00n$00g$00s$00) (B5
  =http://www.google.co.uk/pagead/iclk?adurl=http://www.amazon.co.uk/exec/ob\
idos/external-search%3Ftag%3Droscosolutions%26keyword%3Dbirds%26mode%3Dbooks-u\
k&sa=1&ai=BW2r0o98AQvKADLuuQbHk9JwHhtWFCMrNsqsBt7bCBaCNBhAEGAQgt1QoBTgAQIoWSLs\
5oAHVtMD_A6oBHG9yZy5tb3ppbGxhOmVuLUDC0m9m2mljaWFsX3PIAQE&num=4) (B6
  =1107353689046400) (B7
  =http://www.googleadservices.com/pagead/adclick?adurl=http://www.amazon.co\
.uk/exec/obidos/external-search%3Ftag%3Droscosolutions%26keyword%3Dbirds%26mod\
e%3Dbooks-uk&sa=L&ai=BW2r0o98AQvKADLuuQbHk9JwHhtWFCMrNsqsBt7bCBaCNBhAEGAQgt1Qo\
BTgAQIoWSLs5oAHVtMD_A6oBHG9yZy5tb3ppbGxhOmVuLUDC0m9m2mljaWFsX3PIAQE&num=4)
  (B8=googleadservices.com) (B9
  =http://www.amazon.co.uk/exec/obidos/external-search?tag=roscosolutions&ke\
yword=birds&mode=books-uk) (BA=amazon.co.uk) (BB
  =http://www.amazon.co.uk/exec/obidos/external-search/026-5665785-2744400?t\
ag=roscosolutions&keyword=birds&mode=books-uk) (BC
```

Figure 61: Section of Doe’s browsing history in which he uses the ‘birds’ search to visit a book search on Amazon for the key word ‘birds’.

r\$00d\$00s\$00) (BD
=http://www.amazon.co.uk/exec/obidos/ASIN/0007176147/qid=1107353690/sr=2-1\\
/ref=sr_2_11_1/026-5665785-2744400) (BE=1107353699221030) (BF
=A\$00m\$0a\$00z\$00o\$00n\$00.\$00c\$00o\$00.\$00u\$00k\$00:\$00 \$00B\$00o\$00o\$00k\$00s\\
\$00:\$00 \$00G\$00a\$00r\$00d\$00e\$00n\$00 \$00B\$00i\$00r\$00d\$00s\$00 \$00 (\$00C\$00o\$001\$00\\
1\$00i\$00n\$00s\$00 \$00G\$00e\$00m\$00 \$00s\$00.\$00) \$00) (CO
=http://www.amazon.co.uk/exec/obidos/ASIN/0713666161/qid=1107353690/sr=2-3\\
/ref=sr_2_11_3/026-5665785-2744400) (C1=1107353729754936) (C2
=A\$00m\$0a\$00z\$00o\$00n\$00.\$00c\$00o\$00.\$00u\$00k\$00:\$00 \$00B\$00o\$00o\$00k\$00s\\
\$00:\$00 \$00G\$00a\$00r\$00d\$00e\$00n\$00 \$00B\$00i\$00r\$00d\$00s\$00 \$00 (\$00C\$00o\$001\$00\\
1\$00i\$00n\$00s\$00 \$00G\$00e\$00m\$00 \$00s\$00.\$00) \$00) (CO

Figure 62: Section of Doe’s browsing history in which he uses an amazon book search for ‘birds’ to visit pages for two books.

o\$00f\$00 \$00G\$00a\$00r\$00d\$00e\$00n\$00 \$00B\$00i\$00r\$00d\$00s\$00) (C3
=http://www.google.co.uk/search?q=bird+wallpaper&sourceid=mozilla-search&s\\
tart=0&start=0&ie=utf-8&oe=utf-8&client=firefox-a&rls=org.mozilla:en-GB:offici\\
al) (C4=1107353742483238) (C5

Figure 63: Section of Doe’s browsing history in which he makes a google search for ‘bird wallpaper’.

\$00 \$00w\$00a\$001\$001\$00p\$00a\$00p\$00e\$00r\$00) (C6
=http://www.naturewallpaper.net/birds_L.html) (C7=1107353751766587)
(C8=naturewallpaper.net) (C9
=F\$00r\$00e\$00e\$00 \$00B\$00i\$00r\$00d\$00 \$00W\$00a\$001\$001\$00p\$00a\$00p\$00e\$00r\
\$00 \$00-\$00 \$00B\$00a\$001\$00d\$00 \$00E\$00a\$00g\$001\$00e\$00 \$00A\$001\$00b\$00a\$00t\$00\
r\$000o\$00s\$00s\$00 \$000\$00w\$001\$00 \$00F\$00a\$001\$00c\$00o\$00n\$00 \$001\$000\$002\$004\$00\
x\$007\$006\$008\$00) (CA
=http://as.casalemedia.com/s?s=53524&u=http%3A//www.naturewallpaper.net/bi\
rds_L.html&f=2&id=5780266264.517584) (CB=as.casalemedia.com) (CC
=http://pagead2.googlesyndication.com/pagead/ads?client=ca-pub-02416839746\
10684&dt=1107353756202&lmt=1107353751&format=468x60_as&output=html&url=http%3A\
%2F%2Fwww.naturewallpaper.net%2Fbirds_L.html&ref=http%3A%2F%2Fwww.google.co.uk\
%2Fsearch%3Fq%3Dbird%2Bwallpaper%26sourceid%3Dmozilla-search%26start%3D0%26sta\
rt%3D0%26ie%3Dutf-8%26oe%3Dutf-8%26client%3Dfirefox-a%26rls%3Dorg.mozilla%3Aen\
-GB%3Aofficial&u_h=768&u_w=1024&u_ah=738&u_aw=1024&u_cd=24&u_his=5&u_nplug=5&u\
_nmime=13) (CD=1107353756523427) (CE=pagead2.googlesyndication.com) (CF=)
(DO
=http://asg36.casalemedia.com/s?s=53524&u=http%3A//www.naturewallpaper.net\
/birds_L.html&f=2&id=5780266264.517584) (D1=asg36.casalemedia.com) (D2
=http://isg10.casalemedia.com/V2/40842/43608) (D3=isg10.casalemedia.com)
(D4=http://isg10.casalemedia.com/V2/40842/43608/) (D5=\$00-\$00H\$00c\$00m\$00e\$00)
(D6=http://www.naturewallpaper.net/birdsLpages/image4.html) (D7
=1107353781739686) (D8=b\$00a\$001\$00d\$00_ \$00e\$00a\$00g\$001\$00e\$003\$00. \$00j\$00\
p\$00g\$00) (D9
=http://media.fastclick.net/w/get.media?t=n&sid=11194&m=1&f=b&v=1.4&c=1495\
&r=http%3A//www.naturewallpaper.net/birds_L.html&d=f) (DA
=media.fastclick.net) (DB=W\$00i\$00n\$00n\$00e\$00r\$00 \$00!\$00!\$00!\$00!\$00)
(DC
=http://pagead2.googlesyndication.com/pagead/ads?client=ca-pub-02416839746\
10684&dt=1107353782360&lmt=1107353781&format=468x60_as&output=html&url=http%3A\
%2F%2Fwww.naturewallpaper.net%2FbirdsLpages%2Fimage4.html&ref=http%3A%2F%2Fwww\
.naturewallpaper.net%2Fbirds_L.html&u_h=768&u_w=1024&u_ah=738&u_aw=1024&u_cd=2\
4&u_his=6&u_nplug=5&u_nmime=13) (DD
=http://www.naturewallpaper.net/birdsLpages/image21.html) (DE

Figure 64: Section of Doe's browsing history in which he downloads 'image21.html' from 'naturewallpaper.net'.

```

24&u_his=6&u_nplug=5&u_nmime=13) (E2
    =http://pagead2.googlesyndication.com/pagead/iclk?sa=1&ai=Bv4uhneAAQrfmAqX\
-QcmCpMoK0MuACPLnwJwBwI23AcC4AhACGAIg05r2ASgCQIoWSIo5sgEXd3d3Lm5hdHVyZXdhbGxwY\
XB1ci5uZX56AQk0Njh4NjBfYXPIAQHaAStodHRwOi8vd3d3Lm5hdHVyZXdhbGxwYXB1ci5uZXQvYml\
yZHNfTC5odG1s&num=2&adurl=http://uk.shop.com/amos/cc/main/ccn_search_catsa/st/\\
bald%2Beagle/sy/products/ccsyn/518/SourceID/30&client=ca-pub-0241683974610684)
(E3=1107353988627176) (E4
    =http://pagead2.googlesyndication.com/pagead/adclick?sa=L&ai=Bv4uhneAAQrfm\
AqX-QcmCpMoK0MuACPLnwJwBwI23AcC4AhACGAIg05r2ASgCQIoWSIo5sgEXd3d3Lm5hdHVyZXdhbG\
xwYXB1ci5uZX56AQk0Njh4NjBfYXPIAQHaAStodHRwOi8vd3d3Lm5hdHVyZXdhbGxwYXB1ci5uZXQv\
YmlyZHNfTC5odG1s&num=2&adurl=http://uk.shop.com/amos/cc/main/ccn_search_catsa/\\
st/bald%2Beagle/sy/products/ccsyn/518/SourceID/30&client=ca-pub-02416839746106\
84) (E5
    =http://uk.shop.com/amos/cc/main/ccn_search_catsa/st/bald+eagle/sy/product\
s/ccsyn/518/SourceID/30) (E6=1107353996518523) (E7=uk.shop.com) (E8
    =$00H$000$00P$00.$00C$000$00M$00 $00-$00 $00S$00e$00a$00r$00c$00h$00 $00r\
$00e$00s$00u$001$00t$00s$00 $00f$00o$00r$00 $00b$00a$001$00d$00 $00e$00a$00g$00\
1$00e$00) (E9
    =http://amos.shop.com/amos/cc/main/catalog/pcd/7107298/prd/10187717/ccsyn/\\
518/_x/_Choices-Direct---Movies-Bird-Safari---Bird-Watcher's-Paradise-(VIDEO\"))
(EA=1107354019751931) (EB=amos.shop.com) (EC

```

Figure 65: Section of Doe's browsing history in which he accesses an ad and views a page for 'Bird Watcher's Paradise (VIDEO)'.

```

m$00e$00n$00t$00a$00r$00y$00) (ED
    =http://www.google.co.uk/search?hl=en&client=firefox-a&rls=org.mozilla%3Ae\
n-GB%3Aofficial&q=bird+stories&btnG=Search&meta=) (EE=1107354145392593)

```

Figure 66: Section of Doe's browsing history in which he makes a google search for 'bird stories'.

```

d$00 $00s$00t$00o$00r$00i$00e$00s$00) (F0
    =http://birding.about.com/od/stories1/) (F1=1107354158781846) (F2
    =birding.about.com) (F3=B$00i$00r$00d$00 $00s$00t$00o$00r$00i$00e$00s$00 $00\
a$00n$00d$00 $00t$00a$001$00e$00s$00) (F4
    =http://n479ad.doubleclick.net/adi/abt.hobbies/hobbies_birding;svc=:site=b\
irding;t=14;pc=1;fd=0;fs=0;a=;sbj=pid512;kw=;chan=hobbies;syn=about;tile=1;r=0\
;dcpt=ist;sz=728x90;ord=1522EMf0020SA1B0c43) (F5=n479ad.doubleclick.net)
    (F6=C$001$00i$00c$00k$00 $00H$00e$00r$00e$00!) (F7
    =http://z.about.com/5/ad/go.htm?gs=birding) (13A=1107354403013033)
    (F8=z.about.com) (F9=G$00c$00o$00g$001$00e$00 $000$00f$00f$00e$00r$00s$00)
    (13D=8) (FA=http://z.about.com/0/ip/417/5.htm?CDN=hobbies) (FB
    =http://z.about.com/0/ip/496/0.htm) (FC
    =US$00n$00t$00i$00t$001$00e$00d$00 $00D$00o$00c$00u$00m$00e$00n$00t$00)
    (FD=http://z.about.com/0/ip/512/6.htm) (FE
    =http://z.about.com/0/ip/512/12.htm) (FF
    =http://n479ad.doubleclick.net/adi/abt.hobbies/hobbies_birding;svc=:site=b\
irding;t=14;pc=1;fd=0;fs=0;a=;sbj=pid512;kw=;chan=hobbies;syn=about;tile=4;r=0\
;sz=728x91;ord=1522EMf0020SA1B0c43) (100=1107354165701797) (101
    =http://z.about.com/6/c/b.htm?gs=birding) (102
    =CS$00u$00r$00r$00e$00n$00t$00 $00H$00e$00a$00d$001$00i$00n$00e$00s$00)
    (135=7) (103=http://z.about.com/5/ad/am.htm?pid=about) (104
    =AS$00u$00d$00i$00e$00n$00c$00e$00 $00M$00a$00t$00c$00h$00 $00D$00a$00t$00a\
$00 $00A$00g$00e$00n$00t$00) (105
    =http://birding.about.com/library/weekly/aa102598.htm) (106

htm) (118=1107354258124694) (119
    =http://birding.about.com/library/blhousespecs.htm) (11A
    =$S$00p$00e$00c$00s$00 $00f$00o$00r$00 $00B$00u$00i$001$00d$00i$00n$00g$00 \
$00B$00i$00r$00d$00h$00o$00u$00s$00e$00s$00 $00a$00n$00d$00 $00f$00o$00r$00 $00\
u$00s$00e$00 $00i$00n$00 $00B$00i$00r$00d$00 $00H$00o$00u$00s$00e$00 $00P$001$00\
a$00n$00s$00) (11C
    =http://n479ad.doubleclick.net/adi/abt.hobbies/hobbies_birding;svc=:site=b\
irding;t=0;pc=4;fd=0;fs=0;a=;sbj=pid512;kw=;chan=hobbies;syn=about;tile=1;r=0\
;u=0mfh7s21101cie;dcpt=ist;sz=728x90;ord=1522EOJ0E20SA2k0X896) (11D
    =http://n479ad.doubleclick.net/adi/abt.hobbies/hobbies_birding;svc=:site=b\
irding;t=0;pc=4;fd=0;fs=0;a=;sbj=pid512;kw=;chan=hobbies;syn=about;tile=2;r=0\
;u=0mfh7s21101cie;sz=120x600;ord=1522EOJ0E20SA2k0X896) (11E
    =http://n479ad.doubleclick.net/adi/abt.hobbies/hobbies_birding;svc=:site=b\
irding;t=0;pc=4;fd=0;fs=0;a=;sbj=pid512;kw=;chan=hobbies;syn=about;tile=4;r=0\
;u=0mfh7s21101cie;sz=728x91;ord=1522EOJ0E20SA2k0X896) (11F
    =http://birding.about.com/cs/buildhouses/index.htm) (120
    =1107354272956021) (121=http://birding.about.com/od/buildhouses/)

$00b$00i$00z$00 $003$003$006$00) (132
    =http://birding.about.com/library/weekly/aa010703a.htm) (133
    =1107354295398291) (134

```

Figure 67: Section of Doe's browsing history in which he views pages on 'birding.about.com' for bird stories.

```
(14A=http://www.imdb.com/title/tt0056869/) (14B=1107355224804712) (14C
```

Figure 68: Section of Doe's browsing history in which he visits the IMDB page for 'The Birds'.

```
o$00t$001$00a$00n$00d$00) (18C
    =http://www.pbs.org/lifeofbirds/songs/kakapo.ram) (18D=1107357101433171)
    (18E=http://www.pbs.org/lifeofbirds/songs/dawn.ram) (18F=1107357126469171)
```

Figure 69: Section of Doe's browsing history in which he returns to 'www.pbs.org' to view two audio files.

```
$00o$00w$00s$00 $00g$00n$00u$00p$00g$00) (193
    =http://www.gnupg.org/download.html) (194=1107359871816787) (195
    =gnupg.org) (196=http://www.gnupg.org/download/) (197

(1A0=http://openpgp.vie-privee.org/wingpg.html) (1A1=1107359938182216)
```

Figure 70: Section of Doe's browsing history in which he obtains GNU Privacy Guard.

```
-----$00g$00) (198=http://www.winppt.org/) (199=1107359903121801) (19A=winppt.org)
(19B=W$00i$00n$00P$00T$00) (19C
    =http://www.stud.uni-hannover.de/~twoaday/winppt.html) (19D
    =stud.uni-hannover.de) (19E
```

Figure 71: Section of Doe's browsing history in which he obtains Windows Privacy Tray and views a University of Hannover guide on how to operate it.

```
<(1B5
    =http://www.google.co.uk/search?client=firefox-a&rls=org.mozilla%3Aen-GB%3A
Aofficial_s&hl=en&q=bird+mating+calls&meta=&btnG=Google+Search) (1B6
    =1107433300782139) (1B7
    =G$00o$00o$00g$001$00e$00 $00S$00e$00a$00r$00c$00h$00:$00 $00b$00i$00r$00d\
$00 $00m$00a$00t$00i$00n$00g$00 $00c$00a$001$001$00s$00)>
{1:^80 {(k^81:c) (s=9)1 } [-8E(^82^1B5) (^84^1B6) (^85^1B6) (^88^87) (^87^1B7)]}
@$$}2}@

@$$}3}@

<(1B8=http://whyfiles.org/shorties/104chick_sex/) (1B9=1107433316685006)
    (1BA=whyfiles.org) (1BB=C$00h$00i$00c$00k$00a$00d$00e$00 $00K$00a$00r$00a\
$00o$00k$00e$00)>
```

Figure 72: Section of Doe's browsing history in which he searches for 'bird mating calls' and downloads 'aggressive_song.wav'.

```
<(1CC
    =http://images.google.co.uk/imgres?imgurl=http://www.insaneanimals.com/ite\
ms/177.jpg&imgrefurl=http://www.insaneanimals.com/funny-animals/177.html%3Fscrl\
t%3Ddate&h=290&w=350&sz=10&tbnid=97SA3_kw84UJ:&tbnh=96&tbnw=116&start=6&prev=\
images%3Fq%3Dyoung%2Bchicks%26hl%3Den%26lr%3D%26client%3Dfirefox-a%26rls%3Dorg\
.mozilla:en-GB:official_s%26sa%3DG) (1CD=1107442862240841) (1CE
```

Figure 73: Section of Doe's browsing history in which he downloads '177.jpg'.

```

<(1D9
  =http://images.google.co.uk/imgres?imgurl=http://www.cvm.okstate.edu/instr\
uction/kocan/disk2/images/img0056.jpg&imgrefurl=http://www.cvm.okstate.edu/ins\
truction/kocan/ostrich/ostbk2b2.htm&h=768&w=512&sz=108&tbnid=xe9EaVDii1EJ:&tbn\
h=141&tbnw=94&start=24&prev=/images%3Fq%3Dyoung%2Bchicks%26start%3D20%26hl%3De\
n%26lr%3D%26client%3Dfirefox-a%26rls%3Dorg.mozilla:en-GB:official_s%26sa%3DN)
  (1DA=1107442934074132) (1DB

```

Figure 74: Section of Doe’s browsing history in which he downloads a copy of ‘ostbk2b2.htm’.

```

<(1E1
  =http://images.google.co.uk/imgres?imgurl=http://people.cornell.edu/pages/\
sah67/chicks2.jpg&imgrefurl=http://people.cornell.edu/pages/sah67/summer.html&\
h=450&w=600&sz=39&tbnid=7SZWO4nGCbYJ:&tbnh=99&tbnw=132&start=59&prev=/images%3\
Fq%3Dyoung%2Bchicks%26start%3D40%26hl%3Den%26lr%3D%26client%3Dfirefox-a%26rls%\
3Dorg.mozilla:en-GB:official_s%26sa%3DN) (1E2=1107443034648752) (1E3

```

Figure 75: Section of Doe’s browsing history in which he downloads ‘chicks2.jpg’.

```

<(1EA
  =http://www.google.co.uk/search?client=firefox-a&rls=org.mozilla%3Aen-GB%3\
Aofficial_s&hl=en&q=bird+screensavers&meta=&btng=Google+Search) (1EB
  =1107948420919723) (1EC

<(1ED=http://www.traveltex.com/screen.asp?SN=6245300&LS=0&SS=1) (1EE
  =1107948432436283) (1EF=traveltex.com) (1FO=$00c$00r$00e$00e$00n$00s$00a$00\
v$00e$00r$00s$00)>
{1:^80 {{(k^81:c) (s=9) 1 } [-A3(^82^1ED) (^84^1EE) (^85^1EE) (^88^1EF) (^87^1F0)]}
@${13})@

@${14}@
<(1F1=11079484450682520>[-A3:^80(^82^1ED) (^84^1F1) (^85^1EE) (^88^1EF)
 (^87^1F0) (^86=2)]@${14})@

@${15}@

<(1F2=http://www.traveltex.com/downloads/screensavers/birds.zip) (1F3

```

Figure 76: Section of Doe’s browsing history in which he downloads ‘birds.zip’.